

CHEMICAL  
LIBRARY

APR 25 1949

MARCH-APRIL 1949

# THE BULLETIN

OF THE



AMERICAN SOCIETY OF HOSPITAL PHARMACISTS

VOLUME 6

NUMBER 2

## AS *The President*

SEES IT



Is a pharmacy essential to the operation of a hospital? According to the American College of Surgeons' point rating plan for hospitals, the pharmacy is a desirable asset to the hospital but it is not essential. As many of you know, the point rating system places the various hospital departments in either of two categories: essential divisions, and adjunct and service divisions. Pharmacy is listed under the adjunct and service divisions. Further, pharmacy has been given only 10 points out of a possible score of 1000.

Several weeks ago I had the privilege to appear on a panel discussion of this point rating system at the time of the sectional meeting of the American College of Surgeons held in Washington, D. C. On this panel were representatives from all departments of the hospital recognized in the plan. Every speaker made constructive suggestions for improving that section in which he or she was particularly concerned. Nearly every speaker asked for a larger allocation of points for his or her department.

I emphasized that the pharmacy is an essential department of the hospital. Pharmaceutical service is just as necessary in the proper treatment of patients as are X-Ray and clinical laboratory services in proper diagnosis. While it is true many small hospitals do not require the full-time services of a pharmacist, there should be a qualified pharmacist responsible for the activities of the pharmacy and available for consultation and part-time service.

While pharmacy has been allotted only 10 points out of the 1000 for the hospital, I feel that pharmacy contributes far more than 1% to the proper care of the patient. To earn our points, only four questions must be answered satisfactorily. However,

the actual number of points assigned to any department is relatively unimportant, but I would like to see a better breakdown of pharmacy's points. Accordingly, I have prepared a questionnaire which covers the various phases of our Society's proposed standard for the hospital pharmacy. This standard was published in our Bulletin for September-October, 1948. The questionnaire has been submitted to the American College of Surgeons for their consideration in a forthcoming revision of the point rating system.

\*\*\*\*\*

This is my last opportunity to address the members of the Society on the President's page. It is human nature for an incoming officer to set his sights high, and when the end of the year rolls around, he finds that he has fallen short of the goal. Nevertheless, an optimistic outlook is a far healthier condition than having the target within easy reach. In many respects I am pleased with the progress made by the Society during my term of office and yet I feel a degree of disappointment over certain objectives which have not come to fruition.

I sincerely appreciate the opportunity afforded me to serve the Society. The members of our committees and the other officers have been most cooperative. To our entire membership, THANK YOU.

Cordially,

*H. Arthur Ponder*



Volume 6 - Number 2

March-April 1949

DON E. FRANCKE  
Editor

GLORIA NIEMEYER  
Associate Editor

#### ASSISTANT EDITORS

Sister Mary Etheldreda  
Herbert L. Flack  
Leo F. Godley  
James Inashima  
Albert P. Lauve  
George L. Phillips  
Evelyn Gray Scott  
Anna D. Thiel  
Eddie Wolfe

#### EDITORIAL OFFICE

University Hospital  
Ann Arbor, Michigan

#### PUBLICATION OFFICE

American Pharmaceutical  
Association, Washington, D. C.

Copyright 1949 by the  
American Society of  
Hospital Pharmacists

THE BULLETIN is published bimonthly by the American Society of Hospital Pharmacists, a national organization devoted to the profession of hospital pharmacy, dedicated to the interests of the hospital pharmacist, and pledged to cooperate with the American Pharmaceutical Association with which it is affiliated.

Contributions of articles by hospital pharmacists, or by others interested in the progress of this important branch of the public health profession, will be accepted if they are of general interest to those in hospital pharmacy. The editors reserve the right to revise all material submitted, if necessary.

The American Society of Hospital Pharmacists and the American Pharmaceutical Association assume no responsibility for the statements and opinions advanced by contributors to THE BULLETIN. Views expressed in the editorials are those of the editor and do not necessarily represent the official position of the American Society of Hospital Pharmacists.

#### CONTENTS

As The President Sees It . . . . .	opp. 49
Correspondence . . . . .	50
Needed - A Public Relations Program, An Editorial . . . . .	51
Hexachlorophene (G-11) As a Skin Germicide . . . . .	52
The Pharmaceutical Survey and Hospital Pharmacy . . . . . Donald A. Clarke	62
Pharmacy At Albany Hospital . . . . . Betty Jean Hageman	66
Narcotic Control and Preparation of Sterile Narcotic Solutions . . . . . F. Zahalan	69
Neomycin, A New Antibiotic Against Streptomycin-Resistant Bacteria, including Tuberculosis Organisms . . . . . Selman A. Waksman and Hubert A. Lechevallier	73
Therapeutic Trends . . . . .	76
Veterans Administration Pharmacist . . . . .	78
Hospital Pharmacy Division . . . . . Robert P. Fischelis	81
Internships in Hospital Pharmacy . . . . .	82
Pharmacy and Public Health . . . . .	85
News Items . . . . .	86
Answers to Queries . . . . .	88
Fourth Institute on Hospital Pharmacy . . . . .	90
Organization News . . . . .	93
Positions in Hospital Pharmacy . . . . .	95
New Members . . . . .	96





## CORRESPONDENCE

Dear Sir: I wish to accept your invitation for membership in the American Society of Hospital Pharmacists and ask that you submit my application to the American Pharmaceutical Association. I am enclosing my check in the amount of \$13.00.

Geo. F. Westerburg

Veterans Administration  
Waco, Texas

Dear Sir: Three copies of THE BULLETIN recently came my way. It is an excellent publication suited to the needs of hospital pharmacists. May I congratulate you on a grand job.

Will you please place my name on the mailing list to receive copies of THE BULLETIN as published? There is some difficulty about sending dollars out of this country at present, but I am arranging for a subscription of twenty dollars to reach you in the near future.

J. S. Peel

Hawke's Bay Hospital Board  
Napier, New Zealand

Gentlemen: Enclosed find application and check for membership in the American Pharmaceutical Association and the American Society of Hospital Pharmacists.

This organization is doing more to further the cause of hospital pharmacy than any other, and THE BULLETIN is a "must" -- for reasons obvious to any reader.

May the New Year further your already evident success.

Joe R. Sykes

The John Gaston Hospital  
Memphis, Tennessee

Dear Sirs: In the December 6th issue of the Journal of the National Association of Retail Druggists I read that in the July-August issue of THE BULLETIN of the American Society of Hospital Pharmacists there was published a number of formulas for preparing ophthalmic solutions which were made sterile by chemical sterilization. Ac-

cording to this article you are the publisher of THE BULLETIN and upon receipt of \$.50 you will send a copy to any purchaser. Accordingly, you will find \$.50 in coin enclosed and I will appreciate it if you will mail me this issue.

James N. Trattner

York, Pennsylvania

Dear Sirs: Enclosed is my application for membership in the American Society of Hospital Pharmacists, together with my check for three dollars. I have been employed at the Medical College of Virginia since September, 1947, both as hospital pharmacist and instructor at the Pharmacy School.

I am looking forward to membership in your organization as I have read and enjoyed THE BULLETIN for several years, and have rather anxiously awaited the time when I would be fully eligible to join.

Joanne Branson

Richmond, Virginia

Dear Sir: I am much obliged for your very kind letter of November 4, 1948. The booklets sent by you have also been received a few days back and I am deeply indebted to you for the same.

I find much useful information in THE BULLETIN of the American Society of Hospital Pharmacists. I wish to obtain copies of the same regularly and shall thank you to arrange regular posting. Kindly let me know the annual subscription for it so that I can arrange to remit the amount.

India, as you know, with its newly won freedom, is a land of vast potentialities. The profession of pharmacy here has to make much progress in many directions before it could stand on par with the profession in other countries. We are hopeful of doing it. Organizations like yours could play a very important part in helping us to attain the desired goal and we look forward to your cooperation in full measure.

Requesting you to accept my sincere thanks,

L. S. Rajagopalan

Ganapathy Agraharam  
Punkunnam, Trichur  
(Cochin State), India



# EDITORIAL

51

## NEEDED -- A PUBLIC RELATIONS PROGRAM

Recognition of the full potentialities of a professional group is determined to a large extent on the publicity job done by those representing the profession. Public relations, and here we use the term in its broadest sense to include interprofessional and intrahospital relations, is fundamentally an educational program. Its purpose is to make hospital pharmacy better understood, its potentialities fully appreciated by other professions, by hospital administrators, by patients and by the public at large. Lack of appreciation stems from a lack of understanding. It is our job to furnish the basis for this understanding.

One of the most common complaints of those in hospital pharmacy is that the Pharmacy has little standing, is unappreciated, has been relegated to a minor role, is provided inadequate space, lacks proper equipment, is assigned insufficient personnel and the salary paid to hospital pharmacists is far too low.

These complaints are generally true but the responsibility for their persistence lies not so much with hospital administrators as they do with those of us who have neglected to establish and maintain standards and a good public relations program to sell them. The realization of this point is the first step toward progress.

The area for effort is large. We must direct our program to colleges of pharmacy to promote the establishment of hospital pharmacy courses and to encourage the development of graduate programs, especially in conjunction with internships. Pharmacy students should be shown the potentialities which exist in the practice of pharmacy in hospitals.

The public relations program must be directed to hospital administrators by the Division, the Society and its affiliated chapters and, of equal importance, by the individual hospital pharmacists. Copies of the Minimum Standards for Pharmacies in Hospitals should be sent to the administrators of every hospital in the country having more than 50 beds. These should be followed periodically by well thought out publicity material which emphasize an important aspect of hospital pharmacy and its value to the hospital as well as to the patient. The various hospital journals represent an important medium through which administrators may be reached. An outstanding example of what can be accomplished is the series of articles on hospital pharmacy which Evelyn Gray Scott organized in 1948 for Hospitals, The Journal of The American Hospital Association.

While the above activities are necessary and must be carried on a national level, they cannot replace the public relations program that each of us can do in our own hospital with more tangible results. Results must come through people and we in our individual hospitals have the best opportunity to sell the administration and the allied professions on the value of the Department of Pharmacy.

We can begin by putting our ideas on paper as to what the pharmacy should be. We can develop a plan, present it to our administrator and discuss it with him. We can ask for and accept criticism, for in answering the critic we can show what we need to do the job in such a way to overcome his criticism. We can begin with what we have in the department and organize it, we can keep the pharmacy clean, have it painted, order books for the library, request needed items of equipment at the same time showing the justification for their purchase.

We can be courteous and cooperative with all hospital personnel and with representatives who call on us. We can volunteer to participate in the educational program of the hospital for nurses, interns and the staff. We can maintain a general attitude of sincere desire for service and the improvement of service to the patient - the fundamental concept of the professional individual.

We can remember that in all hospitals the chief pharmacist is a department head and, as such, the administrator looks to him for specific plans, ideas and suggestions for the development of his department. The potentialities of a department head are great, but it's up to him to carry the ball.

As a footnote it is well to add that in many hospitals the time is not ripe for progress. Some administrators are not receptive to new ideas from any department head. If this is true in your hospital you owe it to yourself to consider well your future for the next few years. If you are certain your plans and suggestions for the Pharmacy have been well-developed, well-presented and are practical and if you have not been given any cooperation - then you owe it to yourself to make a change. There are many administrators who are looking for pharmacists with ability, ideas and initiative and are willing to pay them well. For those pharmacists who find themselves in this position, this is the ideal time to transfer to a progressive hospital.

**DON E. FRANCKE, Editor**



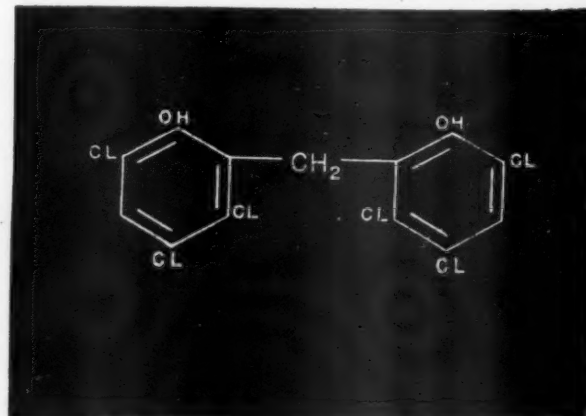
# HEXACHLOROPHENE (G-11) as a Skin Germicide

Attempts to produce a germicidal soap or other agent which would satisfactorily cleanse the skin and, at the same time, materially reduce the bacterial flora have, in the past, not been satisfactory. A comparatively recent development in germicidal soaps is the use of a compound, G-11, which, under certain conditions, greatly reduces the bacterial flora of the skin over a prolonged period of time, appreciably reduces the time for the preoperative scrub, eliminates the necessity of scrubbing with a brush and makes unnecessary the usual alcohol, iodine or quarternary ammonium compound after-rinse. The Council on Pharmacy and Chemistry of the American Medical Association has recognized the name, hexachlorophene, as the generic term for G-11. This substance is designated chemically as bis-(2-hydroxy-3,5,6-trichlorophenyl) methane.<sup>1</sup>

The usual routine for the preoperative preparation of the skin consists in scraping the space beneath the fingernails with a sharp-edged scraper to remove all possible dirt and then scrubbing the hands and arms with warm tap water using a soap which builds up a prolific lather. Scrubbing is continued for a period of ten minutes using a brush with hard bristles. Washing and scrubbing with ordinary soap removes water soluble liquids by emulsifying them and removes solid material, including bacteria, by forming a suspension of them in the lather which may be readily washed

away. In this procedure the mechanical action of scrubbing contributes to the removal of the particles from the skin. The real problem, however, is the destruction of the bacteria which are not removed. These include the bacteria which are normal residents of the skin, as well as those which are picked up by the skin by contact with objects in the environment and whose presence on the skin are of a more transient nature.

Price has classified the bacterial flora of the skin as "transient" and "resident."<sup>2</sup> The presence of transient bacteria is accounted for by surface contact of the skin with objects in the environment. Transient bacteria are relatively easy to remove from the skin, being readily taken off





by washing with soap and water. The resident flora is found on the human skin irrespective of contact contamination and is not easily removed by ordinary washing. When we consider that staphylococci, harmless as well as harmful, make up the main part of the resident flora of the skin, and that ordinary toilet soap is without effect against these bacteria, the main problem resolves itself into finding an agent which will kill the harmful bacteria. Many attempts have been made to accomplish this by the addition of organic as well as inorganic mercurials, phenols, and other substances to soap, but the attempts have not been successful. However, the introduction of the compound, G-11, shows great promise as an agent which, when incorporated into a soap and used for a period of from one to three minutes, will reduce the bacterial flora of the skin to a level unheard of by the use of ordinary soap or by the combination of ordinary soap with other chemicals.

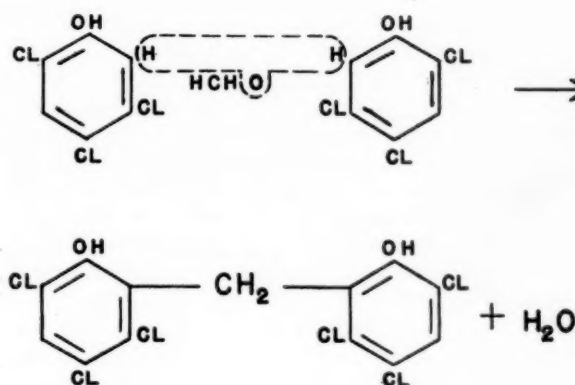
Indeed, the bacterial flora of the skin is reduced to such a great extent that Seastone has suggested the elimination of the scrubbing brush from the surgical wash.<sup>3</sup> Naturally, if this step is eliminated, one of the objectionable features, from the surgeon's point of view, to prolonged scrubbing with a hard bristled brush and the accompanying skin irritation and tenderness, is also obviated. The use of hexachlorophene will also be welcomed by surgeons because the time involved in the surgical wash is reduced from ten minutes to approximately two minutes and, furthermore, there is no need for the irritating and drying alcohol rinse nor for the use of iodine or other germicidal agents after the surgical wash.

Hexachlorophene may be incorporated in bar soap during the manufacturing process and such products are now commercially available. It may also be dissolved in liquid surgical soap or in an alkali-free detergent composition such as pHisoderm. These products will be discussed later.

**METHOD OF TESTING SKIN GERMICIDES:** Price has established a procedure for measuring the germicidal efficiency of an agent on the bacteria of the skin.<sup>4</sup> He noted that successive scrubbing of a given area of the skin using a standard technic and employing approximately the same pressure each time, resulted in a progressive reduction of the skin flora at a constantly diminishing rate. By plotting the bacterial counts from each successive washing, he established a normal logarithmic curve which tends to level off without reaching zero. Germicidal agents may be evaluated by introducing the particular agent in the course of the washing and noting the resulting deviation from the normal curve. Most of the work on the evaluation of skin germicides employs the method of Price or a modification of it.

**DEVELOPMENT OF HEXACHLOROPHENE:** After studying alkylphenols and alkylresorcinols, Hampfl concluded that these substances, and phenols in general, are not suitable for the production of germicidal soap due to the marked inhibitory effect of alkaline metal salts of fatty acids.<sup>5</sup> Gump suggests that the phenols form alkali salts or addition products with soap and that these resulting compounds have little germicidal activity.<sup>6</sup>

In the quest for phenolic substances which would not be influenced by alkali, Gump found a number of diphenols which retained a large part of their bactericidal strength in the presence of soap and were thus practical for the formulation of a germicidal soap.<sup>6</sup> One of these diphenols was G-11 or hexachlorophene.<sup>7</sup> Compound G-11 is prepared by the condensation of two molecules of 2,4,5-trichlorophenol with one molecule of formaldehyde, in the presence of concentrated sulphuric acid as exemplified by the following reaction:



It is a white, crystalline substance with a molecular weight of 406.924 and a melting point of 164° to 165° Centigrade. Hexachlorophene is insoluble in water, but is soluble in alcohol, acetone and dilute alkalis. It readily forms monosodium and monopotassium salts. However, when G-11 is added to excess alkali, only one of the two hydroxy groups is neutralized by alkali, thus leaving the remaining group free. It is believed that this difference from ordinary phenols accounts for the activity of G-11 in the presence of alkaline soap. When incorporated in small amounts in soap, compound G-11 exhibits the unusual property of retaining sufficient of its bactericidal activity to render such soaps germicidal. The behavior of G-11 in this respect is contrary to that of most other phenolic substances. Other properties of the soap, such as detergency, lathering power, pH, and so forth are not affected by the presence of compound G-11.



**BACTERIOLOGY:** The phenol coefficient<sup>6</sup> of hexachlorophene against *Staphylococcus aureus* at 37° Centigrade, determined by the Food and Drug Administration method is approximately 125. Price and Bonnett found that in dilutions as high as 1:5,000,000 to 1:8,000,000 in agar media, G-11 causes complete or nearly complete inhibition of *Staphylococcus aureus*.<sup>8</sup> This bacteriostatic effect disappears when the dilutions are in the neighborhood of 1:20,000,000. *E. coli* grows with only slight reduction of count in a 1:1,000,000 G-11 media. A 1:1,000,000 dilution of G-11 in 0.01 normal sodium hydroxide appears to kill suspensions of *Staphylococcus aureus* after 30 minutes exposure at room temperature, but with exposure of only ten minutes, normal counts are obtained. A 1:1,000 concentration of G-11 in soap will kill *Staphylococcus aureus* in five minutes at 37° Centigrade using standard Food and Drug Administration germicidal procedure. To test the efficiency of G-11 against pathogens, Traub and co-workers carried out experiments on established carriers of *Staphylococcus aureus* and found that 2 percent G-11 in soap was effective in removing this organism in seven out of eight cases of proved carriers, an efficiency of 87.5 percent.<sup>9</sup> Using a simplified swab technic, Udinsky found that the routine use of 2 percent G-11 soap reduced the resident bacterial flora of the skin to less than 5 percent of that present when plain soap was used.<sup>10</sup>

The monosodium or monopotassium salt of hexachlorophene is strongly bactericidal and bacteriostatic against *Staphylococcus aureus* and other Gram-positive bacteria, but has considerably lower activity against Gram-negative organisms such as *E. typhosa* and *E. coli*.<sup>6</sup>

Seastone found that the activity of G-11 is inhibited by serum.<sup>3</sup> The addition of 1 percent sterile sheep serum to the broth or agar used in testing of G-11 depresses the bacteriostatic activity of this compound about one hundred fold. Because of the inhibitory effect of serum and due to its potential toxicity in the blood stream, the use of G-11 in open wounds is not recommended.

One of the factors which may explain the high activity of hexachlorophene is that the compound is taken up by the skin and retained for a considerable interval, exerting a constant bacteriostatic or possibly bactericidal action on the skin bacteria.<sup>3</sup> It has been found by Miller and co-workers that washing or scrubbing leaves a film of soap on the skin which is not entirely removed by ordinary rinsing.<sup>11</sup> It is believed that a thin layer of G-11 probably persists on the hands for some time after each washing and is responsible for the slow, but pronounced reduction of resident bacterial flora which occurs whenever the disinfectant soap is used many times daily for several days. While the cationic germicide, Zephiran,

leaves the skin apparently free from bacteria, subsequent washings with an anionic soap releases a large number of live bacteria, suggesting the presence of an imperceptible film of Zephiran. However, it has been shown by Traub and co-workers that the film of G-11 does not obscure the bacteria of the skin beneath the imperceptible film, but actually kills the bacteria.<sup>9</sup> The emphasis which most workers have placed on the regular, prolonged use of G-11, is undoubtedly associated with the fact that the compound is taken up by the skin and retained for a considerable period of time where it exerts its constant and prolonged activity. This also accounts for the suggestion by some that any washing of the hands without G-11 soap is disadvantageous because the compound would be washed away permitting regeneration of the bacterial flora.

**TOXICITY:** Hexachlorophene has been found to be non-irritating and non-toxic when applied to the intact skin. Traub found G-11 to be non-irritating as judged by more than 400 patch tests which were repeated after 10 to 14 days and were again negative, showing that no sensitivity of the skin had been produced.<sup>9</sup> Subjects using 2 percent G-11 soap regularly for one year have shown no evidence of irritation. Udinsky<sup>10</sup> patch tested more than 200 individuals with an 8 percent solution of a bar soap containing 2 percent G-11. The number of positive reactions to the soap containing G-11 was 4 percent, the same as the control soap without G-11. He used a 2 percent G-11 soap for more than two years on a large number of individuals, who showed no untoward reactions. The probability that occasional sensitization to G-11 will appear is indicated by the report of Seastone, who found one scrub nurse who developed a measles-like eruption about six hours after her first application of this compound.<sup>3</sup> This eruption disappeared on subsequent applications of G-11. However, this was the only case of sensitivity noted by Seastone in several hundred cases.

Hexachlorophene is reported by Gump to be relatively non-toxic when given orally to guinea pigs.<sup>6</sup> The minimum lethal dose for these animals is approximately 300 mg. per kilogram of body weight. However, Price and Bonnett found that when G-11 is injected intravenously it is highly toxic.<sup>8</sup> As little as 35 mg. in dogs weighing between 7 and 8 kilograms usually caused death within a few minutes. The death was characterized by convulsive movements, sudden respiratory cessation, and widespread intravascular clotting of blood.

**OBSERVATIONS ON THE USE OF G-11 IN SURGICAL SCRUB:** According to Seastone, conventional surgical scrubs followed by germicidal

rinses reduced the number of bacteria about ten fold, while the G-11 wash accomplishes a reduction of about a thousand fold from normal skin counts.<sup>3</sup> Price and Bonnett found that a 2 percent G-11 bar soap used many times daily for four or more days reduces the resident bacterial count of skin to about 5 percent of its ordinary size.<sup>8</sup> Continued use of the soap several times every day appears to keep the flora at a low level. If the soap is used only for preoperative scrubbing, but not between times, a persistently low flora is not maintained. Traub and co-workers obtained their most significant results when the subjects used a 2 percent G-11 soap as a regular routine.<sup>12</sup> They found that as long as this soap is used the resident bacterial flora of the skin is decidedly and permanently reduced in number. They also found that an individual using this soap regularly has a lower resident count after two minutes of washing than an individual who washes for twenty minutes with ordinary toilet soap.

Using a 2 percent solution of G-11 in neutral liquid soap in a series of 16 ten-minute surgical scrubs, Clark and co-workers found that the G-11 solution left an average of about one-third of the number of bacteria remaining on the hands than when the soap vehicle alone was used.<sup>13</sup> Furthermore, when the subjects wore surgical gloves containing nutrient broth for 60 minutes after the scrub, the subjects who had used G-11 soap showed a decrease in the number of skin bacteria to about 50 percent of the count at the beginning of the hour, while the control subjects showed an increase of about 100 percent over the population present when the gloves were applied. These data indicate that the number of viable bacteria on the gloved hands increases rapidly when neutral soap is used, but that the number tends to fall during an hour of wearing gloves after a scrub with G-11 soap. Of course, to obtain this effect, the residual G-11 is not washed from the hands before the gloves are applied.

Hufnagel<sup>14</sup> and co-workers compared the reduction in the bacterial flora of the human skin under standard conditions produced by, (1) a 20 percent mixture of liquid coconut oil and olive oil soap, (2) pHisoderm diluted with an equal volume of water, (3) Zephiran chloride, 1:1,000 and (4) pHisoderm diluted with an equal amount of water and containing 1.5 percent G-11.

The results with pHisoderm and G-11 were most striking. The initial colony count was 1500 and the first culture taken after its use showed only 7 colonies. This was in contrast to the first cultures taken after the use of the other agents, which were, in the case of Zephiran chloride, 131 colony count, pHisoderm, 649 colony count, and coconut and olive oil, 460. The authors concluded that pHisoderm fortified with G-11 displayed the

most rapid disinfecting action and appeared to be more effective than any detergent commonly employed for the preoperative preparation of the skin.

A biologic method has been employed by Collier and associates in evaluating the action of hexachlorophene when used for three minutes in contrast to the ten-minute surgical scrub procedure.<sup>15</sup> These workers employed the animal inoculation method of Nungester, Jourdonais and Wolf which tends to differentiate potentially pathogenic from purely saprophytic organisms, and to eliminate false bactericidal effects of chemicals which are only bacteriostatic in nature.<sup>16</sup> Using this method, they injected samples of hand washings, done in peptone water, into the peritoneal cavities of mice, together with mucin which reduces the animal's resistance about one million fold.

During the routine surgical scrub and the use of G-11 soap by this biologic method, they found the mortality following the use of the ten-minute surgical scrub was 12.6 percent, while after the use of a soap containing 2 percent hexachlorophene, there was a mortality of 8 percent, a difference which is statistically significant.

The biologic method was used by Collier and co-workers to determine the relative effectiveness in removing transient streptococci by the ten-minute surgical scrub as compared with the three-minute wash with 2 percent G-11 bar soap.<sup>15</sup> In this study, the hands were contaminated with 5 cc. of a virulent streptococcal culture and the results of washing and scrubbing by the two methods were compared under controlled conditions for five days using animal inoculation technic as before. The results, as expressed in percent mortality as shown in Table I, indicate the greater effectiveness of the three-minute G-11 wash over the ten-minute surgical scrub.

(See Table I, page 56)

**EFFECTS OF SINGLE SCRUB.** The effects of a single isolated scrub using G-11 soap are not satisfactory and it is emphasized that in order to be effective the soap must be used with regularity. As a result of their experiments, Price and Bonnett showed that the reduction in bacterial flora of the hands and arms after a single three-minute scrub using a germicidal soap is very little more than would have been effected by the use of ordinary soap for a similar period of time.<sup>8</sup> Thus, none of the disinfectant soaps which were tested, including G-11, was much superior to ordinary non-medicated soap used for single brief periods of washing or scrubbing.

Table I. Intraperitoneal injection, with mucin, of peptone rinsings taken after cleansing. Contamination with 5 cc. of *Streptococcus hemolyticus* culture on first day of series.

	Hexachlorophene Three-minute wash (6 subjects)			Routine Surgical Scrub Ten-minute (7 subjects)		
	No. Mice Injected	Dead	Percent	No. Mice Injected	Dead	Percent
First day	60	59	98.5	70	69	97
Second day	60	7	11.7	70	27	38.6
Third day	60	9	15	70	32	45.7
Fourth day	60	5	10	70	9	15
Fifth day	60	8	16	70	13	21.7

EFFECTS OF REPEATED, FREQUENT WASHING WITH 2 PERCENT G-11 SOAP IN CONTRAST TO THE EFFECTS AFTER A SINGLE SCRUB. The tests of Price and Bonnett indicate that the bacterial flora of the skin is reduced by frequent, repeated washings with 2 percent G-11 soap, the greatest reduction being after four to seven days of use.<sup>8</sup> Continued use of the soap does not further reduce the bacterial population, but it does keep it at a low level of about 5 percent of the usual number. Once the use of G-11 soap is discontinued, the flora of the skin regenerates promptly and returns to normal proportions in about seven days. This shows that continued use of the germicidal soap is necessary to produce a lasting effect. These workers conducted additional tests on operating room personnel and found that the usual flora of the hands and arms of these persons were markedly reduced by daily frequent washing with 2 percent G-11 soap for one week. Failure to use the soap constantly resulted in prompt return to higher counts.

The importance of the repeated use of G-11 soap several times daily was shown when the liquid soap containing 0.2 percent G-11 (the amount calculated to be in lather when a 2 percent bar soap is used for scrubbing) was placed in soap dispensers in the operating room and used unwittingly by a large number of persons in routine preoperative scrubs.<sup>8</sup> Tests made on representative individuals showed that the bacterial flora of their skin was no lower than when an ordinary non-medicated liquid soap was used. In order to keep the bacterial flora significantly reduced, it

was necessary for these individuals to keep cakes of G-11 soap in their rooms and on the ward where it could be used many times daily.

The results of 121 individual series of hand-washing experiments reported by Traub and co-workers emphasized that the most significant results were obtained by regular, routine use of G-11, 2 percent soap. As long as the soap is used routinely and exclusively, the resident bacteria are decidedly reduced in number. A person using G-11 soap regularly each time that the hands are washed has a lower resident count after two minutes of washing than one who washes for 20 minutes with ordinary toilet soap.

In contrast, Seastone has found that the exclusive use of G-11 soap by the surgeon is not necessary every time he washes his hands so long as he uses G-11 soap for 6 minutes at least once a day, five days a week.<sup>3</sup> However, it is emphasized that the failure to use G-11 soap for longer than two days does reduce the effectiveness of the material.

The persistence of the activity of 1 percent hexachlorophene in potash liquid soap over extended periods of use, from one to three months, was determined by Seastone and Erickson in six individuals who had been using the material under surgical operating conditions three or four days a week.<sup>17</sup> The results of this study, shown in Table III, indicate that the effect is maintained over this period with no indication of the development of hexachlorophene-resistant flora in the skin. This may be contrasted with the effect of the ordinary ten-minute surgical scrub, shown in Table II.



In order to overcome complaints of drying and minor irritation of the skin which were expressed by about one-half of those using a six-minute scrub, Seastone and Erickson studied the effects of reducing the scrubbing time to one minute.<sup>17</sup> The results are shown in Table V and indicate that this time may be substituted for the six-minute period. Although the average is higher than in Table IV, the authors point out that the average has been affected by three unusually high counts, the remaining twelve being satisfactory.

EFFECT OF A TEN-MINUTE SURGICAL SCRUB WITH BRUSH FOLLOWED BY A 70 PER CENT ALCOHOL RINSE\*

INDIVIDUAL	HOURS IN GLOVES	GLOVE CHANGES	ORGANISMS PER LITER OF WASH WATER
L	3	1, after 2 hr.	11,220,000
M	3½	1, after 2½ hr.	3,760,000
N	4	1, after 2 hr.	1,860,000
P	4	1, after 2 hr.	1,900,000
O	3	None	78,000
Q	2½	None	67,000
R	2	Four times	4,700,000
Average			3,569,000

\*No hexachlorophene (G-11) used. Three minute scrub with 70 per cent alcohol rinse between glove changes. Counts made at end of operation.

In this and subsequent tests, subject "L" wore cotton gloves under rubber gloves.

Table II.

EFFECT OF SIX-MINUTE CONTACT WITH 2 PER CENT HEXACHLOROPHENE SOLID SOAP WITH AQUEOUS ZEPHIRAN 1:1000 RINSE\*

INDIVIDUAL	HOURS IN GLOVES	GLOVE CHANGES	NO. OF CONSECUTIVE DAYS' HEXACHLOROPHENE CONTACT INCLUDING DAY OF TEST	ORGANISMS PER LITER OF WASH WATER
A	¾	None	3	450,000
B				360,000
C				140,000
D				73,000
E				89,000
F				871,000
G				117,000
H				440,000
I				183,000
J				60,000
K				56,000
L	3	1, after 2 hr.	3	330,000
M	2½	None	4	2,260,000
N	4½	1, after 3½ hr.	12	2,830,000
O	4½	1, after 3½ hr.	12	30,000
P	3	None	12	680,000
Q	2½	None	12	70,000
Average				531,000

\*One-minute hexachlorophene wash between glove change.

Table III.

EFFECT OF A SIX-MINUTE CONTACT WITH 1 PER CENT HEXACHLOROPHENE IN SEMI-SOLID IVORY SOAP (5%) GEL.\*

INDIVIDUAL	HOURS IN GLOVES	GLOVE CHANGES	NO. OF CONSECUTIVE DAYS' HEXACHLOROPHENE CONTACT INCLUDING DAY OF TEST	ORGANISMS PER LITER OF WASH WATER
J	¾	None	3	2,000
L	3¼	1, after 2 hr.	3	10,000
M	2½	None	2	63,000
N	2½	None	3	3,000
O	2½	None	2	4,000
P	3½	1, after ¾ hr.	12	5,000
Q	2½	None	12	1,000
Average				12,500

\*One-minute hexachlorophene wash between glove changes.

Table IV

Furthermore, the results obtained with 1 percent G-11 in a liquid potash soap followed by a rinse with Zephiran, 1:1,000 (Table V) were greater than those obtained after a six minute scrub with G-11 in a solid, followed by a rinse with Zephiran (Table III). Also, the irritation which occurred after the use of the sodium soap (Table IV) did not occur.

It has also been shown by Seastone that a brief wash (15 seconds) with G-11 soap between glove changes will prevent a rise in the number of bacteria which occurs with ordinary procedures.<sup>3</sup>

It has been found that an alcoholic solution of G-11 (1 percent of the monopotassium salt of G-11 is soluble in 33 percent of ethyl alcohol by volume) is as effective as a soap solution of the agent, but because soap solution is much less irritating, it is preferred.<sup>3</sup>

**ONE MINUTE SURGICAL WASH.** The procedure for the one minute surgical wash recommended by Seastone and Erickson is as follows:<sup>17</sup>

1. The hands and arms are washed (not scrubbed) with ordinary toilet or green soap for one minute or more, and the nails are cleaned. A tap water rinse is used.

EFFECT OF A ONE-MINUTE CONTACT WITH 1 PER CENT HEXACHLOROPHENE LIQUID SOAP WITH AQUEOUS ZEPHIRAN 1:1000 RINSE\*

INDIVIDUAL	HOURS IN GLOVES	NO. OF CONSECUTIVE DAYS' HEXACHLOROPHENE CONTACT INCLUDING DAY OF TEST	ORGANISMS PER LITER OF WASH WATER
A	¾	3	3,000
C	¾	3	2,000
G	¾	3	3,000
I	¾	3	11,000
S	¾	3	3,000
T	¾	3	7,000
L	2½	12	Less than 1,000
M	1½	12	230,000
P	3	12	130,000
Q	2½	12	2,000
R	2½	12	84,000
U	2	12	1,000
V	2	12	1,000
W	2	12	3,000
X	2½	12	Less than 1,000
Average			32,000

\*No glove changes except subject R who changed twice.

Table V.

EFFECT OF ONE TO THREE MONTHS USE OF 1 PER CENT HEXACHLOROPHENE IN LIQUID SOAP, WITH A ONE-MINUTE CONTACT PERIOD\*

INDIVIDUAL	NUMBER OF MONTHS OF HEXACHLOROPHENE USE	HOURS IN GLOVES	ORGANISMS PER LITER OF WASH WATER
L	3	1½	232,000
M	3	3	146,000
P	3	3¾	50,000
Q	3	1½	15,000
U	1	1½	Less than 1,000
V	1	1½	17,000
Average			77,000

\*No glove changes; tests made on second consecutive day of contact.

Table VI.

2. A large palmful of 1 percent hexachlorophene in 20 percent potash soap solution is applied to each hand and arm and a lather is developed. The total amount of contact is one minute (or more), followed by a very thorough tap water rinse.

3. The hands and arms are immersed in aqueous Zephiran 1:1,000 for a few seconds and dried on a sterile towel.

The purpose of the Zephiran rinse is only to destroy hypothetical organisms which may be in the tap water left on the hands. If sterile water is available to rinse the hands of each individual, the Zephiran rinse may be omitted. Alcoholic rinses extract G-11 from the skin and should not be used for that reason.

**SOLID VERSUS LIQUID SOAP AS A VEHICLE FOR G-11.** The effectiveness of hexachlorophene in reducing skin organisms in the preparation of the hands for surgery is considerably greater when the agent is incorporated in a liquid soap, than when it is used in a solid soap, according to the study of Seastone and Erickson.<sup>17</sup> These writers state that the greater effectiveness of hexachlorophene when it is incorporated in a liquid soap rather than a solid soap is probably due to the much larger amount of the material applied to the skin in the liquid form. It is not due to the superiority of potash over sodium soap, since a semi-solid 5 percent sodium soap gel was as effective as a 20 percent potash soap solution. Since more cases of skin irritation occurred after the use of a sodium soap, the authors finally adopted the use of a 20 percent potash liquid soap containing 1 percent of G-11.

Studies by Fahlberg and co-workers indicate that the presence of G-11 on the skin can be demonstrated up to two days after three consecutive daily six-minute applications of 1 percent G-11 in liquid soap of 20 percent strength. When 2 percent G-11 was incorporated in solid soap, recoverable G-11 was reduced tenfold.<sup>18</sup>

**PREPARATION OF 1 PERCENT LIQUID G-11 SOAP.** Ten grams of the monopotassium or monosodium salt of G-11 are dissolved in 50 milliliters of hot 95 percent alcohol. The alcoholic solution is added with thorough mixing to 1 liter of soap solution previously prepared by dissolving 200 grams of clear potash soap in 800 milliliters of hot distilled water. Both solutions are cooled before mixing. The final product contains 5 percent alcohol.<sup>3</sup>

**PHISODERM.** pHisoderm is a non-alkaline, creamy, fluid, sudsing emulsion composed of an ether sulfonate ( $R-SO_2-OH$ ), lanolin cholesterol and petrolatum. Its pH is adjusted to approx-

imately 5.5 with lactic acid thus yielding a composition which has the average pH of the surface of normal skin. pHisoderm is available in three types: oily, regular and dry. The oily has the highest oil content while the dry has the lowest oil content. The regular type is used with hexachlorophene.

pHisoderm is a free-flowing emulsion which acts as follows: During the process of making suds by rubbing with water, the emulsion is broken. The sebum readily becomes a part of the suds because the ether sulfonate has a preferential selectivity for emulsifying animal oils. As the broken emulsion is rubbed over the skin, the ether sulfonate and water also detach and peptize soil, microorganisms and products of excretion, while more and more of the released, unemulsified fats and oils become adherent to the absorptive surface of the skin, forming an emollient film. This protective film cannot be re-emulsified by the now exhausted ether sulfonate nor is it lost by rinsing.<sup>19</sup>

#### THREE-MINUTE SURGICAL WASH USING pHISODERM WITH 3 PERCENT HEXACHLOROPHENE:

The following procedure is employed at the University of Michigan Hospital:<sup>20</sup>

1. Place 1 cc. of the liquid in the palm.
2. Rub it on the hands and arms.
3. Slowly add water and make a lather.
4. Clean nails with orange wood stick.
5. Rinse under tap water.
6. Place an additional 1 cc. of the liquid in the palm.
7. Add water and lather to one inch above the elbow.
8. Rinse under tap water.
9. Omit alcohol rinse.

In this procedure, time is measured by a calibrated sand glass.

**SURGICAL SCRUB USING pHisoderm WITH 3 PERCENT HEXACHLOROPHENE.** The staff of the Peter Bent Brigham Hospital in Boston has been using pHisoderm with hexachlorophene 3 percent for preoperative scrubbing for a year or more.<sup>19</sup> The directions for hand preps at this hospital are as follows:

1. Use a nylon bristle brush.
2. Scrape the subungual spaces with the sharp edged tip of a metal nail file.
3. Keep the nails trimmed to 1 mm.
4. Wet the hands and arms and brush thoroughly. Use the detergent sparingly; 2 cc. will suffice for disinfection.
5. Develop an anatomic scrub so that every area of the skin receives the number of brush

strokes (lengthwise of the brush) indicated below:

- a. Those who scrub at intervals of more than 3 days, 30 brush strokes to the skin; 50 to the nails.
  - b. Those who scrub daily, 15 strokes to the skin; 25 to the nails.
  - c. Those who use pHisoderm with hexachlorophene 3 per cent routinely for washing the hands, 9 strokes to the skin; 15 to the nails.
6. Rinse thoroughly under running water.

pHisoderm with G-11 may also be used for the preoperative preparation of the surgical site. The washing procedure is carried out, preferably, a day or two before the operation and is repeated in the operating room just before surgery. The usual skin germicide, however, is applied after the pHisoderm with G-11 has been rinsed from the skin.

**PREOPERATIVE SKIN PREPARATION.** In addition to its use as a surgical wash, hexachlorophene is also suggested for the preoperative skin preparation of patients. Seastone and Erickson used this material (a 1 percent hexachlorophene in liquid soap) in the surgical preparation of the skin of more than 50 patients, 24 and 48 hours before operation.<sup>17</sup> They studied skin biopsies from several cases as well as from patients subjected to a standard skin preparation with iodine, ether and alcohol, and observed no difference in the results. When used as a preoperative skin disinfectant, it is suggested that the procedure be started 48 hours before the operation since the results will be more effective. If this is not possible, preparation 24 hours preoperatively or on the day of operation will still effect reduction of the skin flora, but to a progressively lesser degree. The following washing procedure is carried out 48 and 24 hours before operation and also on the day of the operation, as soon before incision as is preferable:

#### PROCEDURE

1. The area to be prepared is wet with tap water and 5 to 10cc. (depending on the area) of 1 percent hexachlorophene in 20 percent potash soap solution are poured on and worked up to a lather with a gauze sponge. This is allowed to remain for five minutes, followed by a tap water rinse. In the preparation of the scalp, this is carried out as a shampoo in which case a larger volume of soap (10 to 20 cc.) is necessary. The same five minute contact time is used here. The prepared area need not be covered with a dressing.
2. This is repeated two or three times at daily intervals, including the day of operation.

3. Prior to incision, a strong skin disinfectant such as iodine is applied as usual to destroy superficial organisms.

Thus, it is seen, when used as a preoperative preparation of patients, G-11 is not a substitute for more potent germicides such as iodine which exert a more prompt action on the superficial skin organisms.

The comparison of the effectiveness of hexachlorophene and iodine tincture, U.S.P. for preparing the operative field was made by Collier and associates.<sup>15</sup> Using a biologic method, a culture of hemolytic streptococci was applied to the shaved abdomen of a mouse and after a 1 minute interval the agents to be tested were applied for a 2 minute period and a measured segment of the skin was removed from the animal and placed in its peritoneal cavity together with 0.5 milliliter of sterile mucin. The wound was then closed and the animals observed for five days and effects recorded. Of the 36 animals tested with iodine tincture, U.S.P., 15 died, giving a mortality rate of 42 percent. Twenty-four of the 36 animals tested with hexachlorophene died, yielding a mortality rate of 67 percent. The mortality rate of the control group was 94 percent. These results would tend to indicate that iodine is a superior agent to hexachlorophene for the preoperative preparation of patients.

**OTHER USES.** Fuller and co-workers report the results of the prolonged use of soap containing 2 percent G-11 in reducing pyogenic infections.<sup>21</sup> Using the soap on 389 mentally defective inmates at the Brandon State School, the clinical results indicate a significant decrease in the number and severity of carbuncles, large furuncles and cellulitis as contrasted with the control group. These results are considered particularly significant since it is a well established fact that the severity of pyogenic skin infections in the mentally defective population is higher than in the general population, because of lowered systemic resistance, highly contaminated environment, and poor habits of personal hygiene. Controlled bacterial counts performed at intervals during the experiment on a group of ten inmates who had had the highest incidence of skin infections during the control period showed a corresponding decrease of bacterial skin flora paralleling the clinical results. The authors conclude that the continuous use of G-11 soap is of decided value in the prevention of serious pyogenic skin infections in institutions or other population.

Price reports that one person with acne of the face was observed for more than 18 months, during which time 2 percent G-11 soap was used intermittently.<sup>8</sup> Although the acne was not cured, the incidence of pustules was greatly reduced by



the use of this soap, and each time the use of the soap was discontinued, the number of infections increased.

It is also suggested that G-11 soap may be of benefit in the management of pyogenic skin infections such as impetigo, folliculitis, acne and the prophylaxis of impetigo neonatorum. Its use should serve as a protection against cutaneous infections in barber shops, beauty parlors, and so forth. Attendants of the wounded in front line areas where lengthy surgical scrub is out of the question may benefit by the use of this soap. Its use should be advantageous in occupations where low bacterial flora of the skin is desirable, for example, physicians, nurses, dentists and food handlers. It has been suggested that if hospitals use a soap containing G-11 throughout the institution, that nurses, interns, residents, maids, orderlies and cooks will carry fewer bacteria on their hands. Physicians and surgeons may find it advantageous to use the soap regularly in their office and home.<sup>6,12</sup>

**LIMITATIONS OF G-11.** Price has pointed out that washing with G-11 soap does not protect the skin from subsequent contamination with extraneous bacteria. Even when the soap is used regularly, a relatively large transient flora may be found on the hands between washings; whenever the use of G-11 soap is discontinued, regeneration of the cutaneous flora proceeds at the same rate as though the hands had been disinfected by other means.<sup>8</sup> G-11 does not appear to have a selective action against pathogenic bacteria on the skin. It is believed that the numerical ratio of pathogenic and non-pathogenic organisms is approximately the same before and after disinfection with G-11 soap. Price and Bonnett have warned that G-11 has its limitations and that a false sense of security should not be adopted by those who use this material.<sup>8</sup> They emphasize that the effective reduction of the resident flora of the skin is dependent upon the frequent and unremitting use of G-11 soap. It is pointed out that the use of G-11 soap does not protect the operative wound from organisms which may escape through a torn glove, since it has been found that these organisms which come from the hands previously washed with G-11 soap will grow readily in ordinary culture media and thus could very well grow in wounded tissues. Single periods of scrubbing for 1 to 10 minutes with the disinfectant soaps do not reduce the bacterial flora of the hands and arms more rapidly than similar scrubs with ordinary non-medicated soaps. The antibacterial effect of G-11 is greatly reduced in the presence of blood or serum. Because of its toxicity, G-11 should not be used in wounds.

## HEXACHLOROPHENE--SOURCES AND PRODUCTS

**HEXACHLOROPHENE (G-11).** The chemical is manufactured by the Sindar Corporation, 330 West 42nd Street, New York City 18, New York. This company is an associate of Givaudan-Delawanna, Inc.

**ANTISEPTIC SEPTISOL** is a concentrated liquid soap containing 2 percent of G-11, based on soap content. However, the soap content is not given in the brochure describing the product. This product is made by Vestal Incorporated, 2413 Third Avenue, New York City 51, New York; and of 4963 Manchester Avenue, St. Louis 10, Missouri.

**ARMOUR FORMULA #99** is a 20 percent liquid cocoanut oil potash soap containing 1 percent G-11. It may be obtained from Armour Laboratories, Chicago, Illinois.

**DIAL TOILET SOAP**, made by Armour Laboratories, contains G-11.

**TING ANTIBACTERIAL SOAP**, containing 2 percent G-11 in a bar of toilet soap, may be purchased from The Pharma-Craft Corporation, Inc., 405 Lexington Avenue, New York City 17, New York.

**MEDICATED LIQUID-SAN "T"** soap solution contains 1 percent of G-11, based on the total solution. This is available from Huntington Laboratories, Inc., Huntington, Indiana. A 20 percent solution of G-11 for dilution with surgical soaps is also available from this source.

**PHISODERM WITH HEXACHLOROPHENE (G-11)** 3 percent is marketed by Winthrop-Stearns, Inc., New York City 13, New York. At present the distribution of this product is limited. However, it is believed that the product will be readily available in the near future.

**GILLETTE SHAVING CREAM**,<sup>22</sup> made by The Gillette Safety Razor Company, Boston, now contains G-11.<sup>22</sup>

## SUMMARY

1. The frequent, repeated use of 1 to 3 percent hexachlorophene soap for from one to three minutes several times a day for at least five days a week reduces and maintains the bacterial flora of the skin to about 5 percent of the usual number.

2. Hexachlorophene for a single isolated scrub is not satisfactory and produces little greater reduction in the bacterial flora of the hands than does an ordinary non-medicated soap.

3. Once the use of hexachlorophene soap is discontinued, the flora of the skin regenerates promptly and returns to normal proportions in about 7 days.

4. The use of hexachlorophene wash before donning rubber gloves reduces the number of skin bacteria to about 50 percent of the count found at the beginning of the hour in contrast to the 100 percent increase in the number of bacteria when soap alone is used.

5. A scrub brush is not necessary when hexachlorophene is used for the surgical scrub.

6. In the preoperative preparation of the patient's skin, hexachlorophene is inferior to iodine preparations as a germicide.

7. Hexachlorophene is a non-irritating skin germicide.

8. The use of hexachlorophene in a liquid soap produces superior results in contrast to the effect obtained when the agent is incorporated in a bar soap.

9. An alcohol rinse should not be used after a wash with hexachlorophene since alcohol extracts the substance from the skin.

## REFERENCES

1. Anon: Hexachlorophene, Generic Term for bis (2-hydroxy-3,5,6-trichlorophenyl) methane, Report of the Council on Pharmacy and Chemistry, J.A.M.A. 136: 471, 1948.
2. Price, P. B.: New Studies in Surgical Bacteriology and Surgical Technic, J.A.M.A. 111: 1993, 1938.
3. Seastone, C. V.: Observations on the Use of G-11 in the Surgical Scrub, Surg. Gynec. and Obst. 84: 355, 1947.
4. Price, P. B.: Bacteriology of Normal Skin; New Quantitative Test Applied to Study of Bacterial Flora and Disinfectant Action of Mechanical Cleansing, J. Infect. Dis. 63: 301, 1938.
5. Hampil, B.: Effect of Pure Soaps on Bactericidal Properties of Phenolic Germicides, J. Bact. 16: 207, 1928.
6. Gump, W. S.: The Development of a Germicidal Soap, Soap and Sanitary Chemicals 21: 36, 1945. Ibid. 21: 50, 1945.
7. Gump, W. S.: United States Patent 2,250,480.
8. Price, P. B., and Bonnett, A.: The Antibacterial Effects of G-5, G-11 and A-151 with Special Reference to Their Use in the Production of a Germicidal Soap, Surgery 24: 542, 1948.
9. Traub, E. F.; Newhall, C. A., and Fuller, J. R.: New Cutaneous Bactericidal Agent Used in Soap, Arch. Dermat. and Syph. 52: 385, 1945.
10. Udinsky, H. J.: Reduction in the Total Skin Flora by the Daily Use of a Soap Containing Dihydroxy Hexachloro Diphenyl Methane, J. M. Soc. New Jersey 42: 15, 1945.
11. Miller, B. F.; Abrams, R.; Huber, D. A., and Klein, M.: Formation of Invisible, Nonperceptible Films on Hands of Cationic Soaps, Proc. Soc. Exper. Biol. and Med. 54: 254, 1943.
12. Traub, E. F.; Newhall, C. A., and Fuller, J. R.: The Value of a New Compound Used in Soap to Reduce the Bacterial Flora of the Human Skin, Surg. Gynec. and Obst. 79: 205, 1944.
13. Clark, D. G. C.; Lockwood, J. S., and Lewitt, E.: 2,2' Dihydroxy -3,5,6,- 3',5',6', Hexachlorodiphenylmethane (G-11) As an Antiseptic for Use in Surgical Scrubbing, Surgery 22: 360, 1947.
14. Hufnagel, C. A.; Walter, C. W., and Howard, R. W.: An In Vivo Method for Evaluation of Detergents and Germicides, Surgery 23: 753, 1948.
15. Collier, F. A.; Nungester, W. J.; Thirlby, R. L., and Vial, A. B.: Evaluation of Hexachlorophene and Other Agents as Substitutes for the Surgical Scrub Using an Animal Inoculation Technique, In Print.
16. Nungester, W. J.; Wolf, A. A., and Jourdonais, L. F.: Effect of Gastric Mucin on Virulence of Bacteria in Intraperitoneal Injections in Mouse, Proc. Soc. Exper. Biol. and Med. 30: 120, 1932.
17. Seastone, C. V., and Erickson, T. C.: A Comparison of Solid and Liquid Soap as Vehicles for G-11 (Hexachlorophene) in the Surgical Wash, Surgery 25: 290, 1949.
18. Fahlberg, W. J.; Swan, J. C., and Seastone, C. V.: Studies in the Retention of Hexachlorophene (G-11) in Human Skin, J. Bact. 56: 323, 1948.
19. Anon: Winthrop-Stearns Brochure, pHisoderm with Hexachlorophene (G-11) 3%, 1949.
20. Thirlby, R. L.: Personal Communication.
21. Fuller, J. R.; Newhall, C. A.; Thorne, F. C., and Traub, E. F.: Effectiveness of Compound G-11 in Reducing Pyogenic Skin Infections, Am. J. Pub. Health 38: 1228, 1948.
22. Aaron, H.: Health and Medicine, Consumers Reports 14: 36, 1948.



Donald A. Clarke

Donald A. Clarke, author of the following article, was appointed by the American Council on Education to The Committee on The Pharmaceutical Survey as a representative of hospital pharmacy. As apothecary-in-chief at the New York Hospital, Mr. Clarke has had long experience in hospital pharmacy and is an outstanding member of the profession. He has served as first vice-president of the A.Ph.A., and as chairman of the former A.Ph.A. Subsection on Hospital Pharmacy. He has been active in the development of minimum standards for hospital pharmacies and has served on various committees in the American Society of Hospital Pharmacists. He is also a Research Fellow and Member of the Teaching Staff, Department of Pharmacology, Cornell University Medical College; Lecturer in Pharmacology; New York Hospital--Cornell University School of Nursing.

## THE PHARMACEUTICAL SURVEY and Hospital Pharmacy

**A**pril 15, 1946, a searching examination into the total Profession of Pharmacy was placed in motion. Much in the way of preface had been accomplished to finance and bring this work into being during preceding months and years. The survey conducted by the American Council on Education was under the direction of Doctor Edward C. Elliott, President Emeritus of Purdue University. During the following two and one-half years Doctor Elliott was assisted by a staff of competent experts as various areas of the profession were brought under inspection. Fifteen people selected from specialized sectors of pharmacy and from the public composed "The Committee on The Pharmaceutical Survey" which was to assume the responsibility of approving the final findings and recommendations of the survey and to perform as an advisory body to Doctor Elliott and his staff. Ex officio members of this Committee were representatives from the American Council on Education.

In October, 1948, the initial "Findings and Recommendations of the Pharmaceutical Survey" were published. Over two years of continuous probing into the broad, complicated spectrum of pharmacy are represented in the publication. The tremendous energies of Doctor Elliott and his staff; the hard, realistic attitude of the Survey Committee; and considerable contributions from interested individuals, organizations and groups are reflected in these "Findings and Recommendations."

Necessarily and wisely, the Survey limited its investigations when an area was encountered which, in itself, presented the need for a survey as exhaustive as the one underway for the entire profession. The philosophy guiding the Survey was to get at the roots and reasons for major forces operative within the profession and to establish a cause and effect relationship. Recommendations were constructed upon such foundations. Therefore, forces were studied which were of fundamental importance to the future of the profession as a whole. Briefly, the Survey concerned itself with such factors as the manpower of pharmacy, student selection and guidance, educational processes--undergraduate as well as postgraduate, the structure and function of the Boards of Pharmacy and the complexion of the practice of pharmacy as illustrated by a comprehensive prescription survey.

One may be impressed with the absence of reference to Hospital Pharmacy in the "Findings and Recommendations" and in subsequent publications. The following quotation from the "Findings and Recommendations of the Pharmaceutical Survey" is pertinent:

Neither has it been possible to analyze and to evaluate the probable influences upon the practice of pharmacy of the projected expansion of



American hospital facilities, or the establishment of community health clinics, or the development of group medical services. As pharmacy seeks to advance its position as a health profession, these influences may not be disregarded.

By those interested in pharmacy who have followed and participated in the planning and implementation of the great programs currently underway to bring to the members of the community the best in health services through the community hospital, it is a shared opinion that if pharmacy keeps pace with these developments the results will prove one of the greatest single factors in favorably modifying and extending American pharmacy as a profession.

It is impossible to erect a sturdy structure on a poorly laid foundation. It was the opinion of those who represented hospital pharmacy on the Survey Committee that it was imperative to bend every effort in the direction of securing a stable foundation upon which hospital pharmacy, as well as all other specialties of the profession, might build in the years ahead.

The following quotations from correspondence directed to Doctor Elliott by this writer during the course of the Survey further illustrate the point:

It is necessary to emphasize...that, given well-founded young graduates in pharmacy, in-service training must, necessarily, accomplish the remainder of that which is required of the modern hospital pharmacist. I am certain that the Colleges of Pharmacy are not aware of their almost complete failure in establishing the foundation so necessary to the superstructure which inevitably must follow...all pharmacists should be trained in certain basic sciences to a degree and in a manner comparable to similar training given to their contemporaries....The community hospital has assumed an immensely important role in the everyday life of individuals....The modern hospital pharmacist has joined, on an equal basis, the group of specialists composing the hospital staff, all of whom, collectively, are directing their efforts toward the improvement of medical care of the individual patient....The pharmacists who...participate in this hospital program shall have to be able to qualify as special-

#### PUBLICATIONS AVAILABLE.....

The report of the Committee on The Pharmaceutical Survey entitled "Findings and Recommendations of the Pharmaceutical Survey" is available for \$1.00 from the American Council on Education, 744 Jackson Place, N. W., Washington 6, D. C.

Other publications resulting from the Pharmaceutical Survey including "The General Report" by Edward C. Elliott, Director, and "The Prescription Study" by J. Solon Mordell, Assistant Director, will be available in the near future. These books also may be obtained from the American Council on Education at \$7.50 each. The general report will include the complete findings, factual data, and recommendations of the survey of pharmacy education, practices, and services. The prescription study is a comprehensive and detailed presentation of the constituents of more than 13,000 present day prescriptions assembled from 220 pharmacists located in 39 states.

ists and, to do so, will need a type of undergraduate training which will make it possible for them to qualify for hospital in-service training and prompt qualification for appointments to hospital staffs...if the Colleges of Pharmacy will provide graduates adequately and thoroughly trained in a curriculum such as that outlined by Leo Godley<sup>1</sup> ..., the training hospitals of the country will undertake the in-service training program for hospital pharmacists....But well founded graduates must be provided.

The major deficiencies presently existing in the graduates from today's colleges of pharmacy appear to this writer to be threefold:

1. - Little or no education in those areas fundamental to community life and good citizenship.

1. Godley, L. F.: Prerequisites for Hospital Pharmacy Interns, Bull. Amer. Soc. Hosp. Pharm., 5, 145 (July-August) 1947.

2. - Inferior, out-moded and insufficient training in certain sciences basic to the intelligent practice of pharmacy: physiology, pharmacology, biochemistry and/or bacteriology. Furthermore, present day pharmaceutical manipulative techniques are neglected.

3. - A firmly entrenched notion that the deficiencies outlined above do not exist.

In the face of circumstances such as these, it is a costly, time-consuming, exhausting process to re-develop a young graduate to fit into the role of a hospital pharmacist. There are other deficiencies evident but which may be circumvented or resolved more readily than the three mentioned above. The Survey has concerned itself with most of these, the adequate resolution of all holding promise of securing the basic structure we recognize as necessary before a pharmacist can broaden intelligently into the exacting position of a hospital pharmacist.

Examine these three areas of deficiency.

One of the great tragedies which has befallen our civilization is the lag in universal knowledge and practice of sociology as contrasted with the great and continuing advances in technology. To secure mankind, this disparity must be eliminated as rapidly as possible. Our approach to, and interpretation of, humanics must be firmly founded and well integrated. Every element of our society which takes upon itself the education of a segment of the population in the interests of specialized functions cannot avoid the social responsibility of first ascertaining that those who it would train possess the qualifications for enlightened citizenship. To knowingly avoid this responsibility is to perpetrate a most serious crime against society.

Our pharmacists must be equipped to deal intelligently with the total responsibilities connoted by the term "world citizenship." Their thinking must be oriented in a fashion whereby they may interpret the significance of world political, geographic, sociologic and economic forces not as they affect the individual but, rather, as the individual and his profession may best integrate into such forces his peculiar community responsibilities.

Ceaseless efforts must be exercised to overcome intolerances; more realistic interpretations of theologic doctrines and dogmas are imperative; the individual must avail himself of the vast, accumulated culture at his disposal in our public repositories; the normal amenities of communal life must be interpreted and practiced; of necessity, introversion must be schooled out of our people--the philosophy of extroversion must become their guide.

It is not pleasant to observe recent graduates from our colleges of pharmacy, almost completely



stultified as a result of an inadequate educational process, reacting toward their colleagues, their community responsibilities as professional practitioners, the communal life of their environment and the philosophy and culture of their era in a completely introverted and irresponsible fashion. Nor for that matter, is it encouraging to encounter the occasional extrovert, misguided in thought and deed, completely ignoring his professional community responsibilities while stumping for the supremacy of the individual.

Several pharmacists have found a satisfactory expression for their professional activities and interests in hospital pharmacy. Among them have been those who have recognized their deficiencies in professional subject matter and have taken tangible steps to remove the barriers of ignorance through graduate study. Others have made efforts to correct their deficiencies by taking advantage of the many educational opportunities open to the individual in the hospital environment, by developing interests in the cultural life of their community and by participating in scientific group meetings. Still others have been satisfied to accept the inevitable seclusion thrust upon them in the erudite hospital environment and have settled progressively deeper into the rut of frustration and introversion.

In efforts to correct the failures of pharmaceutical education in dealing with the problem of providing hospital pharmacists for the future, some training hospitals have made available academic programs at a graduate level to broaden the intellect of the prospective hospital pharmacist. Wherever such a program is associated with a college of pharmacy, it appears to this writer, they are doomed until the colleges of pharmacy acquire inspiration, imagination and an awareness of the needs of their graduates when they become practitioners.

Perhaps the most serious situation existing in our professional world today is the inability or unwillingness of so many of our practitioners to recognize their deficiencies. Innumerable examples may be cited to illustrate the prevalence of this mental lassitude, defeatism and, for that matter, intellectual dishonesty. This is the picture of the poorly prepared individual reacting to his environment. The fault may be laid, largely, at the doorstep of the educational process to which he has been exposed.

Hospital pharmacy must interest itself in the total program outlined by the Survey for each constituent part reflects on the future of the profession. Most particularly should hospital pharmacy interest itself in the educational developments, for its prime concern at this time is there. Considerable controversy has developed over the Survey's recommendations in this area. This is a healthy situation and should prove advantageous provided the commentators stick to the facts. Already there is evident a tendency toward deviation to serve the purpose of defeating experimentation with the Survey's proposed two year pre-professional, college level, then four year professional education program. The following quotation from one columnist in opposition to this program illustrates the point: "While pharmacy is truly a health profession, it is practiced in a highly exacting competitive, commercial setting." An educator has stated: "Any six-year course should apply to all who seek to enter retail pharmacy or not at all." The latter deals with the recommendation that but a few colleges should undertake to provide the six-year program. However, repeatedly, there is being hammered out the notion that the "Profession of Pharmacy" and "Retail Pharmacy" are synonymous. Militant action on the part of hospital pharmacy, and other non-commercial specialties within the profession, will be necessary to protect their interests from being submerged by the general imposition of the term "druggist" with its distinctly self-limiting connotations.

---

In the controversy which has developed about the proposed increase in numbers of years of professional education which the Survey has indicated as necessary, at least in preparation for certain specialties embraced by the profession, the statement has been repeatedly made that the four year course leading to the B.S. degree is adequate provided it be strengthened and embellished. By this very statement acknowledgement is made of the fact that, as it has been presented these past many years, the four year course has not been given its full opportunity to prove its value. It may well be that four years of pure professional education can prove adequate provided preprofessional training at the college level is accomplished preparing the student most particularly in the humanities and basic sciences. By today's standards for the "professional" it is, however, a physical impossibility to accomplish both ends in the period of four years of academic pursuits.

Without attempting to delineate the method in this commentary, it would seem propitious for hospital pharmacy to start immediately to plan to integrate its internship training program into the six-year educating process advanced by the Survey.

The Pharmaceutical Survey has presented a program calculated to build strength into the profession of pharmacy. This program evolved only as accurate and undeniable facts became evident. It represents the collective, earnest thinking of several people who have provided a complete cross-section of the profession and a healthy sampling of the public. It is incumbent upon all hospital pharmacists to digest this program from start to finish, recognize what it portends for the future of the profession, then urge--even fight for--the accomplishment of the ends indicated. The program presented by the Pharmaceutical Survey, if achieved in large measure, can become the exponential of hospital pharmacy.





## *Pharmacy at ALBANY HOSPITAL*

Betty Jean Hageman, Pharmacist  
Albany Hospital, Albany, New York

Albany Hospital is a non-profit, non-sectarian institution which serves as a training center for The Union University School of Nursing and The Albany Medical College. This latter building connects with the hospital. The hospital was founded by two physicians in 1849 and opened its first building in 1851. Since that time constant demands have been made for an ever enlarged building. One site after another was outgrown, until in 1898 the present location was agreed upon and a two-story building consisting of several wings, was completed. Since that time additions have been made and now the hospital provides 650 beds plus a large outpatient department. Once again the need for beds, clinics, offices,

and department working space has forced the planning for more space in the form of new wings. The hospital hopes by July 1951 to have a greatly enlarged outpatient department, 125 additional beds, as well as the much needed space for operating rooms, pharmacy department, central supply, kitchen, solution room, house staff quarters, and storage.

The scope of treatment provided by this hospital is tremendous; for as well as having obstetrics, pediatrics, and contagious wards, it is also equipped with tuberculosis units and psychiatric wards. In fact, this hospital was the first general hospital to have a separate psychiatric ward. This is noteworthy since it suggests

the progressive spirit of the institution. The spirit has again exemplified itself any number of times such as opening of one of the first Cancer Detection Clinics in the area, a special clinic for treating multiple sclerosis, and more recently, a Cerebral Palsy Treatment Center. This variation of patients cared for by the hospital provides the pharmacist as well as the nurse and physician with the complete picture of modern medicine in the world today.

The first available record mentioning the dispensing of medicine in Albany Hospital was in 1873. It mentioned "The Apothecary" and, that the person in charge was expected to act in this capacity from 8:00 A.M. until 7:00 P.M. The Apothecary was not licensed until some time thereafter.

At present the department consists of one room on the first floor, with storage space in the basement. Needless to say, this is inadequate for both the personnel and the work. It is centrally located on the first floor for the hospital's particular needs, but very unhandy for the distant outpatient department.

The staff consists of two full-time pharmacists, one apprentice, and a part-time worker. We operate with the help of a Pharmacy Committee and a Hospital Formulary, with the policy of considering economics only after quality.

Almost all ointments prescribed in the hospital are manufactured in the pharmacy, but we do not make lubricating jelly. Although we do not now have the equipment necessary to make this latter item, it is hoped that by the coming year we can add this and many other products to our list of preparations manufactured.

All liquid products of an unsterile nature are made in the department. This includes everything from inks and laboratory supplies to a kaolin-pectin mixture, benzyl benzoate emulsion, aluminum hydroxide gel, and milk of magnesia--the two latter items being made from their corresponding magmas.

We do no tablet or ampul work and fill only about 50 per cent of our capsules. However, we are making our own narcotic solutions and dispensing them in hand calibrated (by means of a glass etcher) penicillin bottles. These bottles have proved amazingly accurate for the purpose. With the exception of glycerin suppositories, all suppositories that we stock are made with our machine.

The solution room, which is adjacent to the pharmacy but operates as an independent department, manufactures all the sterile intravenous fluids for the institution. The chief pharmacist acts only as an unofficial counselor.

We prepackage all our clinic supplies. These prescriptions probably average only about twenty

a morning. It is amazing, however, how this small amount of forethought helps a busy staff at a busy time. Other prepackaged items are our aluminum hydroxide gel and ophthalmic solutions. Zephiran chloride is used in these ophthalmics and celon seals are used to further protect them. Needless to say, all our stock drugs for the wards are prepackaged and ready for more rapid replacement in the twenty drug boxes that are filled each morning.

The layout of the new pharmacy consists of separate dispensing, manufacturing, and "sterile manufacturing" rooms.

The "sterile room" will be equipped with a sterilizer, balance, burner, sink, adequate work space, and a source of distilled water. In this room will be made small injectibles; we have found that unless you set aside a territory--especially in a compact department--no space is kept "sacred" for sterile manufacture.

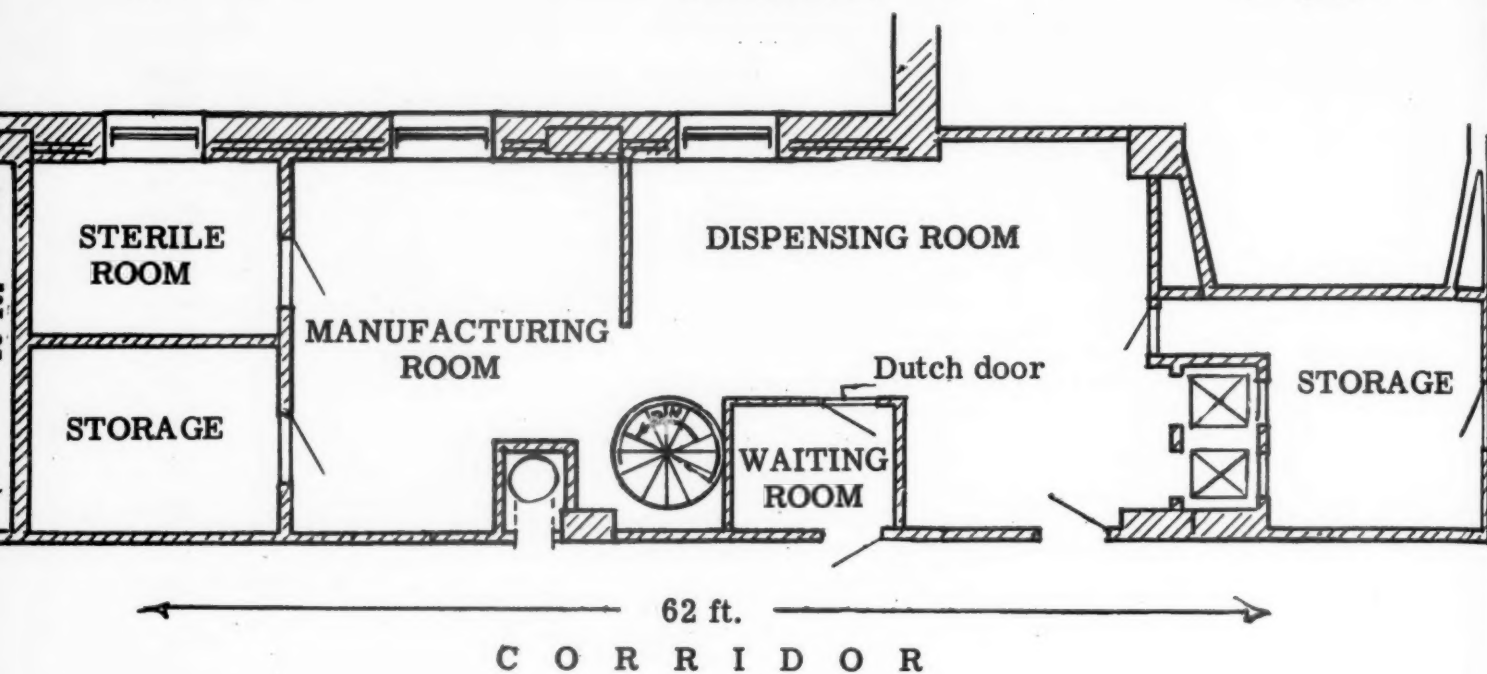
At either end of the layout there will be small, handy storerooms. One will be used for ampul and tablet stock, while the other will be for the often-needed larger items that are used throughout the day. There will be a large room in the basement devoted solely to storage. It will be equipped with a large storage refrigerator for over-flow stock. This space will be connected to the other rooms by both a spiral staircase and a dumb-waiter.

## FUTURE PLANS

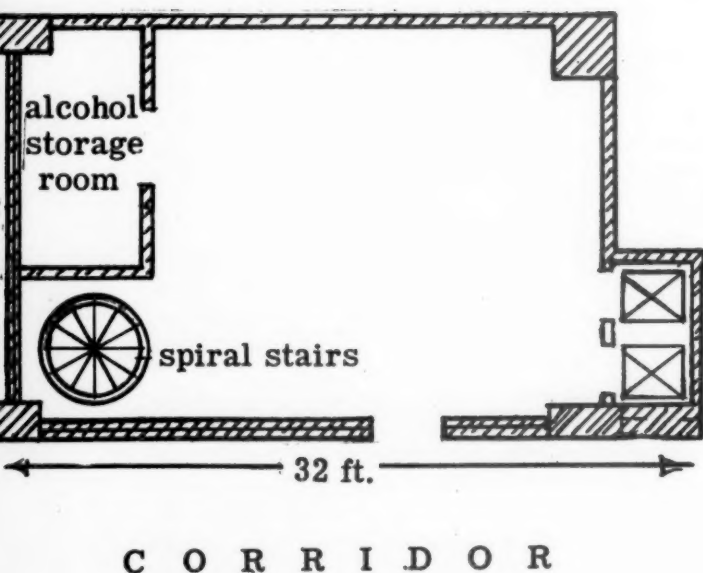
I would rather talk about the future since pharmacy as a whole has an important place there--particularly in our pharmacy. Since there will be a greatly increased number of outpatients as well as bed patients, the work of the pharmacy will increase in proportion.

So, to meet these demands, the pharmacy will move to larger quarters, still on the first floor, but adjacent to the outpatient wing and near other service departments. Elevators and dumb-waiter systems will be conveniently located for the utilization and efficiency of the hospital as a whole.

All that we institute and purchase now is with an eye to this future, for by gradually adding necessary equipment, we will be prepared when the time comes. A start has already been made by the purchase of an electric Alsop Hy-Speed Mixer, and once this piece has paid for itself, we hope to add an ointment mill and tube-filling machine. We also hope to have our own still and autoclave by the time we enter the new quarters. These will be particularly necessary then, since we will not be near to either the solution or central supply rooms. Then, too, we will undoubtedly be making many more of our small injectible solutions.



PHARMACY  
FIRST FLOOR PLAN  
ALBANY HOSPITAL  
scale: 1/8 in. = 1 ft.



PHARMACY  
BASEMENT FLOOR PLAN  
ALBANY HOSPITAL  
scale: 1/8 in. = 1 ft.

The manufacturing area will be equipped with a large sink, a still, and all necessary manufacturing equipment--along with adequate cabinet and work space.

The dispensing room will have a smaller sink, Schwartz cabinets, drawers, and work space. We are planning the refrigerator and safe convenient to the main dispensing desk and dumb-waiter, for we have learned that unnecessary steps are made to these units in these days of modern prescription writing. Space has been provided in this room for the chief pharmacist's desk, files, and cabinets. Close by will be shelves for reference books and racks for professional periodicals and journals. The files of brochures and excerpts, as well as the items aforementioned, will be readily accessible and open for use by the staff, the student, and the personnel.

So, you see, I can't write solely about the present pharmacy and our duties and procedures, for it would give the impression that we are backward, but satisfied. Now perhaps you can see that we are trying to do what we can in our present situation and improving what we can to make ready for the challenge which is close at hand. The challenge? Naturally, to be able to supply a leading medical center efficiently with not only quality products and good service economically, but also with knowledge and information in a truly professional and friendly manner. May we be able to meet this challenge?



# Narcotic Control and Preparation of Sterile Multiple Dose Solutions

F. Zahalan, B.Ph., L.Ph., Pharmacist-in-Chief  
Department of Pharmacy,  
The Montreal Hospital  
Montreal, Canada

This paper is undertaken with the view of acquainting hospital pharmacists with the preparation and control of sterile multiple dose narcotic solutions. Such methods as will be outlined hereunder have been successfully in use in this hospital for the past 15 years.

First, it must be decided what narcotic solutions are to be manufactured and their strengths. The following is a list of the most commonly used solutions in this hospital:

- (a) Sterile Solution Morphine Sulfate . . . . . gr. 1/4 - 10 minims
- (b) Sterile Solution Morphine Sulfate . . . . . gr. 1/6 - 10 minims
- (c) Sterile Solution Codeine Phosphate . . . . . gr. 1/2 - 10 minims
- (d) Sterile Solution Morphine 1/4 and Atropine 1/150 . . . . . gr. - 10 minims
- (e) Sterile Solution Morphine 1/6 and Atropine 1/150 . . . . . gr. - 10 minims

These solutions are termed "stock" solutions. That is, the wards have these solutions available for immediate use as ordered by the physician. No charge is made to the patient's account for the use of such stock drugs.

The next step is to decide on a container for such solutions. We have found empty 10cc. insulin containers which are plentiful in any hospital, to be suitable. These vials may be cleaned as follows:

1. Rinse out thoroughly with hot tap water.
2. Soak overnight in a solution of green soap then rinse with warm water.
3. Rinse in a solution of trisodium phosphate (2 oz. to 1 gallon of water). Then rinse with warm water.
4. Finally clean vials with pyrogen-free water and sterilize by any approved method.

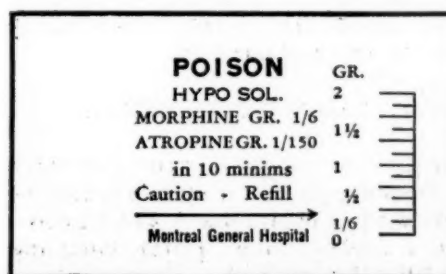
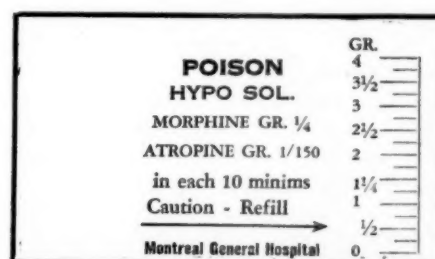
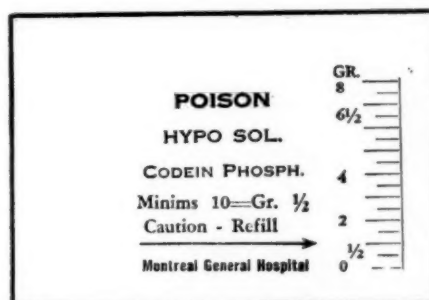
An alternate procedure is to clean vials thoroughly with acid-dichromate mixture.

We now attempt to design a label which will allow for a fairly accurate control of the contents of the vial. The label in use in this department was devised by the writer and consists of calibrations on one side of the label. (Fig. 1) This label

partly encircles the vial and allows for easy reading of calibrations. This method was adopted in lieu of a calibrated bottle owing to the expense involved in obtaining such vials.

To design the calibrations one must construct a scale. This is done by the following steps.

1. Fill the vial with the total volume of solution required (i.e., a 10 cc. vial will hold, say, 4 grs. or 160 minims of 1/4 gr. to 10 minim solution).
2. Affix a blank label lightly to the bottle and mark off the upper level of the solution and the inner bottom of vial on label. (Fig. 2.)



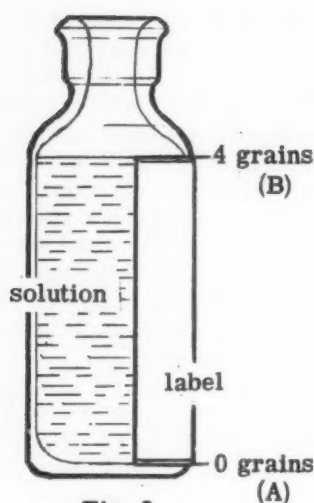


Fig. 2

The lower marking corresponds to zero, the starting point, and the upper marking to 4 grs., the total volume.

3. The label is then removed and the scale 0 to 4 is divided into 16 equal parts, each part corresponding to  $1/4$  grain. (Fig. 3.) This is done as follows:

Let line AB denote scale markings on label. Drop perpendicular lines AC and BD parallel to each other and on opposite sides of AB. Divide AC and BD into 16 equal parts:  $x_1 - x^{16}$ ,  $y_1 - y^{16}$ ,  $z_1 - z^{16}$  etc. Join  $x$  to  $x^{16}$ ,  $y$  to  $y^{16}$ , etc.

∴ It may readily be seen that AB has become divided into 16 equal parts and each part being equivalent to  $1/4$  grain of morphine.

This method of dividing line AB is definitely more accurate than to attempt to do it directly. The reason for this is that lines AC and BD can be of indeterminate length. Any convenient length may be selected arbitrarily. Thus, if AC and BD are extended to measure 4 inches each, it is easier and more accurate to divide it into 16 quarter-inch parts and to subsequently join  $x - x^{16}$ , etc. than to divide AB, which is of a determined length, into 16 equal divisions.

The original calibrated label is used to prepare a plate and when labels are required the hospital printer runs off the desired quantity.

#### PREPARATION OF NARCOTIC SOLUTION:

1. The narcotic is weighed and carefully checked. Dissolve powder in sterile pyrogen-free distilled water containing 0.25% chlorobutanol as a preservative. Filter using any approved filtration method.

2. Fill vials with required quantity (plus 10% overage) by any desired method.
3. Stopper vials with washed (use pyrogen free water) muslin, gauze, or any suitable material. If a means of holding the stoppers in place during sterilization is available (as described in THIS PUBLICATION 2:79 (May-June 1945) rubber diaphragm stoppers may be inserted at this point.
4. Sterilize in an autoclave. The procedure used in this department is 10 lbs. pressure for 15 minutes. (Our autoclave is adjusted to record a temperature of  $125^{\circ}\text{C}$  at this pressure.)
5. Remove from autoclave and cap with sterile rubber stoppers and seal with seal-on bands.
6. Finally affix label carefully so that the zero line corresponds to the inner bottom of the vial or bottom of solution. On issuing to wards a top reading is taken. For example if a vial after sterilization barely holds 4 grains of morphine only  $3-3/4$  grains is recorded in ward narcotic book to allow for waste.
7. Aseptic precautions are adhered to as in the preparation of any sterile solution and sterility tests are performed periodically.

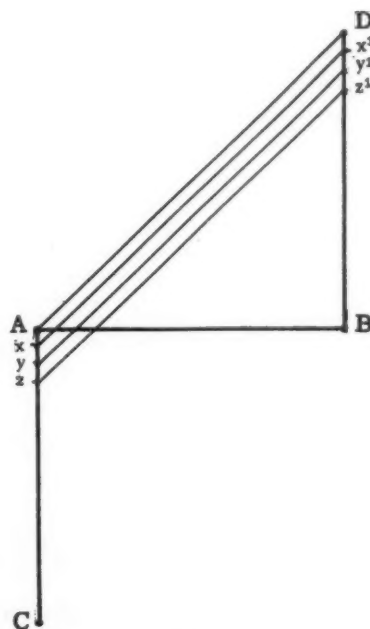


Fig. 3

## 10%

free  
ma-  
rs in  
(as  
May-  
may

diture  
 sure  
 sted  
 this

- file  
nds.  
ero  
the  
to  
ple  
s 4  
re-  
for

the  
er-

- the
- 
- er-

- [illegible]

**Fig. 6**

**Fig. 4**

**Fig. 5**

(e) On the first day of each month all completed sheets are returned to the pharmacy where they are retained for a period of two years. These are available to the narcotic authorities for inspection.



The following is a list of regulations which is placed in the ward narcotic book to be observed by the ward nurses: -

**THE MONTREAL GENERAL HOSPITAL  
REGULATIONS IN REGARD TO  
NARCOTICS AS APPLICABLE TO WARD  
STOCKS**

- 1 - All narcotics administered on this ward, must be entered in this Narcotic Register in BLUE INK, together with the signature of the nurse administering the drug.
- 2 - Such narcotic entries must be made at the time the drug is administered.
- 3 - A Nurse assuming charge of the ward, on taking over from her confrere must check all stock narcotics and sign for them in the Register in RED INK.
- 4 - The Nurse in charge must also check the stock narcotics on the ward before 4 P.M. daily with a view to replenishing the stock from the Dispensary not later than that hour. This Narcotic Register must be taken to The Dispensary on each occasion new stocks are required.
- 5 - Completed sheets of Narcotic Registers must be returned to the Dispensary on the first day of each month.
- 6 - Additional sheets for this book may be obtained from the "Stores Department" on requisition.
- 7 - Patients' special narcotic prescriptions must be entered under heading of "Miscellaneous," e. g., H. T. Heroin, Pantopon, Dilaudid, Demerol, Papaverine, etc.

**ALL NARCOTICS MUST BE KEPT UNDER  
LOCK AND KEY AT ALL TIMES**

### Comments

This system entails not only a great monetary saving to the institution but also is a wonderful time-saver to the nurse administering the drug. Injections may be made with rapidity and accuracy and lifts the field of sterile solutions out of the "spoon and lamp" method into a more scientific procedure.

I repeat that this paper is intended only as an aid to hospital pharmacists who have often thought of preparing sterile multiple dose narcotic solutions but have hesitated due to a lack of a suitable method of control.

### INTER-PROFESSIONAL RELATIONS PROGRAM

Plans for holding an annual regional program for promoting Inter-Professional Relations have been inaugurated in California. Representatives from the various pharmaceutical organizations have drawn up a plan with the following objectives:

1. To correlate activities where an important or damaging situation involves or endangers the principles, standards, relationship or reputation of the profession of pharmacy as a whole or in part.
2. To promote understanding for each others problems and to work together to analyze them.
3. To re-activate the local A. Ph. A. Chapter.
4. To permit the exchange of information and pool ideas that stimulate improvement.
5. To obtain a united pharmacy front and promote professionalism.
6. To create a constructive channel by this program for pharmacists who are ineligible for membership in the established groups to contribute actively to American pharmacy and stimulate eligible pharmacists to join their respective groups.
7. To present if possible the first Forum in September, 1949.
8. To encourage delegates from:
  - a. Southern California Counties.
  - b. Adjacent Western States.
  - c. All recognized Pharmacy organizations.
  - d. All A. Ph. A. members and pharmacists in allied professions.

Representatives from the American Society of Pharmacists include Sister Mary Junilla, Charles Hagan and Walter Hitzelberger.

# Neomycin, a New Antibiotic Active against Streptomycin-Resistant Bacteria, including Tuberculosis Organisms

Selman A. Waksman and Hubert A. Lechevalier<sup>2</sup>

New Jersey Agricultural Experiment Station  
Rutgers University

THE ISOLATION OF STREPTOMYCIN from two strains of an actinomyces identified as *Streptomyces griseus*, was reported (8) from this laboratory five years ago. This was later followed by announcements that this antibiotic is highly effective against the tuberculosis organism (9), that it is active *in vivo* against a variety of pathogenic bacteria, and that it is not very toxic to animals (7). The ability of streptomycin to control experimental tuberculosis was soon established (2). Within less than a year after the isolation of streptomycin had been reported, its effectiveness upon certain forms of human tuberculosis was demonstrated (3). Thus, for the first time in the history of human tuberculosis, a drug was found which could be used in the treatment of tuberculosis by means of chemotherapeutic agents and which pointed to the possibility of finally eradicating the "white plague" of man.

Streptomycin has, however, certain important limitations, chief among which are (a) its neurotoxic potentialities, and (b) the development of resistance among the infectious organisms upon its prolonged administration. Recent experiments (4) seem to indicate that the toxic reactions can apparently be overcome, at least partly, by the use of dihydrostreptomycin, a reduced form of streptomycin. The problem of development of resistance remains, therefore, as the major limitation of this antibiotic, especially in the treatment of tuberculosis.

The possibility of isolating or synthesizing new compounds that would be effective against the streptomycin-resistant strains of bacteria suggested itself. Various reports indicated that certain synthetic compounds such as the sulfones and para-aminosalicylic acid, and various antibiotics such as different forms

of streptothricin (5) and aureomycin (1) might prove to possess such properties. Although the results obtained thus far in some of the preliminary investigations with these substances are highly encouraging, they still appear to be inconclusive. We do not yet know whether or not any of these would serve to replace streptomycin, completely or partly, or to supplement it on more than a very limited scale. They may not be sufficiently active against the bacteria, or they may be toxic to animals and man, or they may lack stability, or have some other limitations.

In connection with the studies on the production of antibiotic substances by microorganisms, carried out in our own laboratories since 1939, many thousands of cultures, mostly actinomycetes belonging to the genus *Streptomyces*, were isolated from soils, composts, peats, and other natural substrates and tested for their activity against different bacteria; emphasis has been laid, in recent years, upon the mycobacteria. Surprisingly enough, a large number of the organisms thus isolated were found to possess considerable activity against *Mycobacterium tuberculosis*. Unfortunately, only a very few of the antibiotics produced by these organisms proved to be suitable chemotherapeutic agents, because of various limitations, some of which were just mentioned. The fact that numerous strains and species of *Streptomyces* possess the capacity to inhibit the growth of mycobacteria, however, and even to produce active antituberculosis compounds, and the fact that one of these, streptomycin, already had found practical application as a chemotherapeutic agent, offered the hope that sooner or later other substances would be found that might be even better. In search for new compounds, particular attention was paid to those that would be effective against streptomycin-resistant bacteria, notably against the streptomycin-resistant strains of *M. tuberculosis*. The discovery of such an agent, designated as *neomycin*, is reported here.

The organism producing neomycin was isolated from the soil. It is somewhat related to a culture isolated from the soil in 1915 by Waksman and Curtis (10) and designated as *Actinomyces fradii* (now listed in Bergey's Manual as *Streptomyces fradiae*).

<sup>1</sup>Paper of the Journal Series, New Jersey Agricultural Experiment Station, Rutgers University—The State University of New Jersey. Department of Microbiology. This work was supported by a grant from the Rutgers Research and Endowment Foundation.

<sup>2</sup>The authors wish to express their sincere appreciation to Dr. A. Swart, Miss D. Hutchison, Mr. D. Harris, Mr. W. Iverson, and Mr. E. Katz of this laboratory, for assisting with some of the investigations reported here; also to Mr. J. Frankel of this laboratory, and Mr. O. Graessle, of the Merck Institute of Therapeutic Research, for assisting with the *in vivo* studies.

When the newly isolated culture was grown in various media containing a source of nitrogen (peptone, meat extract), a carbohydrate (glucose), and salt (NaCl),

2. The antibiotic spectrum of the crude neomycin is quite distinct from that of streptomycin, on the one hand, and of streptothricin, on the other.

TABLE 1  
ANTIBACTERIAL ACTIVITY OF CULTURE FILTRATE  
CONTAINING NEOMYCIN

Test organism	Units of activity in 1 ml of broth	
	Incubation* 3 days	Incubation* 5 days
<i>Escherichia coli</i> .....	60	100
<i>Bacillus subtilis</i> .....	350	1,000
<i>B. mycoides</i> .....	330	400
<i>Staphylococcus aureus</i> ..	330	330
<i>Mycobacterium</i> 607 ....	330	1,000
<i>M. ranae</i> .....	330	1,000
<i>M. avium</i> .....	200	600
<i>M. phlei</i> .....	330	1,000

\* Shaken cultures incubated at 28° C.

it was found to produce neomycin under both stationary and submerged conditions of culture. The antibiotic can easily be removed from the culture medium and concentrated by the methods of adsorption and

TABLE 3  
EFFECT OF NEOMYCIN UPON THE GROWTH OF DIFFERENT  
STRAINS OF *M. tuberculosis* IN DUBOS MEDIUM\*

Test organism	Growth inhibition units/ml
<i>M. avium</i> † .....	4.0
<i>M. avium</i> R†† .....	4.0
<i>M. tuberculosis</i> H37Rv† .....	0.1
<i>M. tuberculosis</i> H37RvR† .....	0.2
<i>M. tuberculosis</i> H37Rv .....	0.5-1.0
<i>M. tuberculosis</i> H37RvR .....	1.0
<i>Mycobacterium</i> 607 .....	0.1
<i>Mycobacterium</i> 607R .....	0.25

\* Incubation at 37°/C for 14 days.

† This particular test was made in another laboratory.

‡ R = streptomycin-resistant strain.

Neomycin preparations were found to possess several desirable properties, which fully justified a more detailed study of this antibiotic: (1) similar activity

TABLE 2  
ANTIBIOTIC SPECTRUM OF CRUDE NEOMYCIN, AS COMPARED TO THAT OF CRUDE  
STREPTOMYCIN AND STREPTOTHRICIN

Test organism	Dilution units per gm required to inhibit growth of test organisms		
	Neomycin	Streptomycin*	Streptothricin*
<i>B. subtilis</i> .....	150,000-750,000	125,000	125,000
<i>B. mycoides</i> .....	20,000-150,000	20,000	1,000
<i>B. cereus</i> .....	20,000-60,000	30,000	1,000
<i>S. aureus</i> .....	100,000-250,000	15,000	50,000
<i>S. lutea</i> .....	10,000	100,000	37,500
<i>E. coli</i> SS† .....	25,000	25,000	25,000
<i>E. coli</i> RS† .....	20,000	0	Active‡
<i>Ps. aeruginosa</i> .....	2,500	1,000	1,000
<i>Pr. vulgaris</i> .....	25,000	10,000	12,500
Bodenheimer's organism .....	15,000	0	Active‡
<i>Serratia marcescens</i> .....	20,000	25,000	1,200
<i>Mycobacterium</i> 607 .....	80,000-250,000	Active‡	Active‡
<i>Mycobacterium</i> 607RS .....	50,000-150,000	Inactive	Active‡
<i>Trichophyton mentagrophytes</i> .....	< 300	< 300	Active‡
<i>Candida albicans</i> .....	< 300	< 300	Active‡

\* From Shatz, Bugie and Waksman (8).

† SS = streptomycin-sensitive.

‡ RS = streptomycin-resistant.

§ Active = activity established in other reports.

elution which have been developed for the isolation of streptothricin and streptomycin from their respective culture media.

Neomycin is a basic compound, most active at an alkaline reaction. It is soluble in water and insoluble in organic solvents. It is thermostable. It is active against numerous Gram-positive and Gram-negative bacteria, especially mycobacteria, but not against fungi. This is brought out in Tables 1 and

against both streptomycin-sensitive and streptomycin-resistant bacteria; (2) considerable activity (in some cases greater activity than streptomycin) against various forms of *M. tuberculosis* and other mycobacteria (see Table 3); (3) limited toxicity to animals or none; (4) activity against various bacteria *in vivo*, including Gram-positive and Gram-negative organisms and against both streptomycin-sensitive and streptomycin-resistant organisms (see Table 4); (5) lack of



resistance against neomycin among the organisms sensitive to it, or only limited development of such resistance.

TABLE 4

COMPARATIVE ACTIVITIES OF NEOMYCIN AND STREPTOMYCIN  
in Vivo UPON STREPTOMYCIN-SENSITIVE AND  
-RESISTANT BACTERIA

No. of animals or embryos	Treatment	Dilution of bacterial culture	Surviving mice or egg embryos in days			Percent survival
			2	5	10	
<i>Staphylococcus aureus</i> —streptomycin-sensitive*						
5	Control	10 <sup>-3</sup>	0	0	0	0
5	Control	10 <sup>-5</sup>	1	1	1	20
5	Streptomycin, 25 µg	10 <sup>-3</sup>	5	5	5	100
5	Streptomycin, 100 µg	10 <sup>-3</sup>	5	5	5	100
3	Neomycin, 50 units	10 <sup>-3</sup>	3	3	3	100
3	Neomycin, 200 units	10 <sup>-3</sup>	3	3	3	100
<i>Salmonella schottmulleri</i> —streptomycin-resistant*						
5	Control	10 <sup>-3</sup>	0	0	0	0
5	Control	10 <sup>-4</sup>	4	2	0	0
5	Streptomycin, 100 µg	10 <sup>-3</sup>	2	0	0	0
5	Streptomycin, 5000 µg	10 <sup>-3</sup>	1	1	1	20
5	Neomycin, 100 units	10 <sup>-3</sup>	5	5	5	100
5	Neomycin, 200 units	10 <sup>-3</sup>	5	5	5	100
<i>Salmonella pullorum</i> —streptomycin-sensitive						
10†	Control	10 <sup>-2</sup>	4	0	0	0
10	Control	10 <sup>-4</sup>	6	0	0	0
10	Neomycin, 100 units	10 <sup>-2</sup>	5	5	5	50
10	Neomycin, 100 units	10 <sup>-4</sup>	9	9	9	90

\* Subcutaneous, single dose; mice used.

† Inoculation into allantoic cavity, single dose.

When a 20-hour-old agar culture of *E. coli* was suspended in water and plated out in nutrient agar

containing 5 µ or 25 µ of neomycin per ml, no colonies of *E. coli* developed out of 22 billion cells, after 9 days' incubation at 28° C. Similar concentrations of streptomycin would usually allow the development of a dozen or more bacterial colonies per plate. When pieces of agar were removed from the plates containing neomycin and inoculated into sterile agar plates, only the 5 µ/ml plate gave growth from some of the pieces, but the 10 µ/ml and the 25 µ/ml plates gave no growth at all, thus pointing to the high bactericidal properties of neomycin. When plates containing different concentrations of this antibiotic were streaked with streptomycin-sensitive, -resistant, and -dependent strains of *E. coli* (9), the first two were sensitive alike to neomycin, and the last did not make any growth at all. This established further the difference in the biological and chemical nature of neomycin from streptomycin.

Broth or agar cultures containing sufficient neomycin to inhibit the growth of various bacteria were incubated for considerable periods of time. No further bacterial development occurred beyond a certain initial inhibiting concentration, thus pointing on the one hand to the stability of neomycin, as contrasted to that of aureomycin, and on the other hand to the lack of resistance developed among the sensitive bacteria, as contrasted to streptomycin and especially to grisein.

Since neomycin has not yet been obtained in crystalline form, very little can be said of its chemical nature. Preliminary results, however, point to its being distinctly different chemically from streptothricin and from streptomycin. More detailed studies will be published later.

#### References

1. DUGGAR, B. M. *Ann. N. Y. Acad. Sci.*, 1948, **51**, 177.
2. FELDMAN, W. H., and HINSHAW, H. C. *Proc. Staff Meet., Mayo Clinic*, 1944, **19**, 593.
3. HINSHAW, H. C., and FELDMAN, W. H. *Proc. Staff Meet., Mayo Clinic*, 1944, **20**, 313.
4. HINSHAW, H. C., FELDMAN, W. H., CARR, D. T., and BROWN, H. A. *Amer. Rev. Tuberc.*, 1948, **58**, 525.
5. HUTCHISON, D., SWART, E. A., and WAKSMAN, S. A. *Arch. Biochem.*, 1949, in press.
6. IVERSON, W. P., and WAKSMAN, S. A. *Science*, 1948, **108**, 382.
7. JONES, D., METZGER, H. J., SCHATZ, A., and WAKSMAN, S. A. *Science*, 1944, **100**, 103.
8. SCHATZ, A., BUGIE, E., and WAKSMAN, S. A. *Proc. Soc. Exp. Biol. Med.*, 1944, **55**, 66.
9. SCHATZ, A., and WAKSMAN, S. A. *Proc. Soc. Exp. Biol. Med.*, 1944, **57**, 244.
10. WAKSMAN, S. A., and CURTIS, R. E. *Soil Sci.*, 1916, **1**, 99.

# Therapeutic Trends



New Trends in Medicine and Pharmacy Include SULFAMYLON - THYPHENTOIN TO TREAT EPILEPSY - INTESTINAL EXTRACT IN ULCERATIVE COLITIS - ANTABUS FOR ALCOHOLISM

## SULFAMYLON

A new sulfonamide known as Sulfamylon is said to attack a wider spectrum of bacterial infection than either penicillin or streptomycin alone. It also differs from other sulfa drugs in that organisms (bacteria) do not become sensitive to it. A report in a recent issue of *The Laryngoscope* describes a study of 141 otitis infections in 108 patients showing the striking effectiveness of this new sulfonamide. It is stated that Sulfamylon was effective in every one of the 141 cases treated and it was usually promptly effective. In no instance was treatment necessary longer than 14 days, and in 93 cases the infection was controlled by the seventh day.

Chemically, Sulfamylon is para-(aminoethyl)-benzene sulfonamide hydrochloride. It was originally discovered in Germany during the war where it was used to sprinkle on open wounds. In recent years, upon the recommendation of the Committee on Medical Research of the Office of Scientific Research and Development, this new Sulfonamide was compared with streptomycin, calcium penicillin, parachlorphenol, tryothricin, and zephirin as to the "speed of action and fate in the tissues." Dr. Edward Howes, working at Columbia University found that a mixture of Sulfamylon 5 percent and streptomycin was "nontoxic, relatively stable in the wound, and has almost a complete range of bacterial activity."

Another clinical study was conducted by Dr. Samuel E. Fox at the Department of Otolaryngology of the South Baltimore General Hospital and the

University of Maryland School of Medicine, using Sulfamylon or solutions of the drug with Neosynephrine in more than 200 cases of acute rhinosinusitis in 137 patients. Dr. Fox also described Sulfamylon as "more effective against sinusitis than penicillin solutions, and it has the added advantage of being stable in solution."

Sulfamylon for experimental studies has been made available through Winthrop-Stearns, Inc.

## THYPHENTOIN TO TREAT EPILEPSY

Use of a new drug known as Thyphentoin in the treatment of idiopathic epilepsy is described in the *American Journal of Diseases of Children* (May 1948). This drug has been made available for clinical investigations by Eli Lilly Research Laboratories. Early preliminary studies indicate that Thyphentoin is effective in controlling uncomplicated petit mal attacks. In cases of combined grand and petit mal and/or psychomotor epilepsy, a trial treatment using Thyphentoin may be given. Failure of response to this drug, and particularly the recurrence of grand mal seizures, requires the addition of phenobarbital.

Chemically, Thyphentoin (5,5-phenylthienylhydantoin) is related to diphenylhydantoin sodium. However, it is approximately one-half as toxic as the latter drug. Administration of Thyphentoin resulted in no clinical manifestations of toxicity and no tissue damage was noted on microscopic study.

Sixty-four children with convulsions were treated with Thyphentoin in doses of 0.13 grams two or three times a day. This dose was increased when necessary to 0.39 grams three or four times a day. When the latter dose did not control seizures, the drug was supplemented in petit mal with trimethadione or in grand mal or combined epilepsy with phenobarbital. The drug was usually administered in capsules; however, if administration by the oral route was not possible, the capsule was punctured and the powder inserted into the rectum.

Of the 64 children treated, 24 had grand mal, 12 petit mal and 6 had both types. One patient had akinetic epilepsy, 2 had chronic encephalitis, 16 had residues from cerebral birth injuries, 1 had microcephalia, 1 had subdural hematoma and 1 had cerebral dysgenesis.

The results of treatment with Thyphentoin in adequate doses are as follows: Among 24 children with grand mal, 6 have been free of convulsions; the condition in 15 was improved, and in 3 it was not improved. In 12 children with petit mal 4 have been free of seizures; 5 showed improvement, and 3 showed no improvement. Two of the children who experienced no improvement with Thyphentoin have been free from attacks while receiving trimethadione. In 1 child mentioned previously, anemia developed, and he was again treated with Thyphentoin. The seizures were reported under control for three months. In 5 children with combined epilepsy, 3 have been free of seizures and the condition of 2 improved. Fourteen children with residues from cerebral birth injuries and convulsions were improved, and 2 were not improved.

Patients receiving Thyphentoin should be kept under close observations for toxic reactions including hypertrophy of the gums, ataxia, disequilibrium and incoordination, and appearance of a rash. All reactions except the hypertrophy of the gums subsided promptly on withdrawal of the drug. The blood count must be checked every two weeks for evidence of depression of the bone marrow.

#### ULCERATIVE COLITIS TREATED WITH INTESTINAL EXTRACT

Belief that non-specific ulcerative colitis is due to the absence or a deficiency of an intrinsic protective factor normally present in the intestinal mucosa led to a series of clinical studies using an intestinal extract to treat 71 patients. The exact mechanism of the therapeutic response is not known but the exacerbation which occurred on withdrawal of treatment suggests that sustained improvement may be possible only as long as therapy with the intestinal extract is maintained.

These experimental studies were carried out at the Jefferson Medical College Hospital in Philadelphia by Drs. Benjamin Haskell and N. H. Friedman and reported in the *American Journal of Surgery* (December 1948). Material for the clinical trials was supplied by Wyeth, Inc.

Treatment consisted of administration of 50 to 100 grams of the extract daily in divided doses. Material was provided either as a powder or in

granular form. Treatment continued for several months at this dosage level and was reduced or withdrawn when improvement was well marked. Improvement was apparent in 24 cases and after remission of symptoms, withdrawal of the intestinal extract or substitution of a placebo resulted in relapse, with remission occurring again upon resumption of treatment.

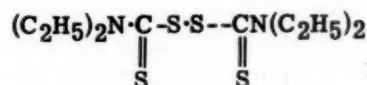
#### ANTABUS FOR ALCOHOLISM

A new remedy for alcoholism, known as Antabus, has been studied in Denmark for its effects in producing hypersensitivity to alcohol and producing the same symptoms after intake of alcohol. A series of papers on the toxicology, pharmacology, and effects of antabus appears in *Acta Pharmacologica Et Toxicologica*, Vol. 4, 1948. Brief abstracts on this work have appeared in the *Journal of the American Medical Association*, Volume 139, numbers 4 and 11.

This drug is also known as Abstinyl. In these studies it was found that when Antabus is given to human subjects, they will be sensitized to alcohol. Given by itself in doses up to two grams, it usually causes no discomfort, but when even a small quantity of alcohol is consumed at the same time, the two drugs combine to form acetaldehyde, which provokes exceedingly unpleasant reactions such as nausea and vomiting. After this condition has lasted from half an hour to four hours, the patient feels tired and drowsy, but he recovers completely in a short time. The distaste he thus acquires for alcohol may last for several days.

In Dr. Larsen's study, Antabus was administered to approximately 300 alcoholic addicts. A detailed account of his first 50 cases with an observation period of over six months was reported. The drug was given daily and there were no untoward complications. Social recovery or considerable improvement could be claimed in 35 cases. All of the remaining 15 patients had discontinued the treatment for some reason or other. He concludes that Antabus is effective in checking the consumption of alcohol, but needs the support of intensive psychotherapy.


Chemically, Antabus is tetraethylthiuram disulphide.



Antabus for experimental use is available from Ayerst, McKenna and Harrison, 22 East 40th St., New York City, 16.



# THE VETERANS ADMINISTRATION PHARMACIST

Rx 

Edited by Eddie Wolfe, Chief Pharmacist,  
Mt. Alto Veterans Hospital, Washington, D. C.

## NEW 1000 BED VETERANS ADMINISTRATION HOSPITAL HOUSTON TEXAS

Patients in the newly acquired Veterans Administration hospital in Houston, Texas, will be assured of the highest possible professional standards of medical care as a result of close cooperation to be furnished the hospital by the Baylor University Medical School in Houston, Carl R. Gray, Jr., Veterans Administrator, said today.

On the recommendation of Dr. Paul B. Magnuson, VA's Chief Medical Director, the VA and Baylor University have entered into an agreement whereby the University has named a Dean's Committee to work with the VA hospital in maintaining medical standards. They will provide residencies for doctors wishing to secure certification as specialists and will assure "medical care second to none" for veteran patients.

The 1000-bed Naval hospital at Houston is being taken over by VA at the direction of the President. VA will assume full control of the hospital when its Naval patients are transferred, which is expected to be by April 15.

## RECENT ADVANCES IN THE VETERANS ADMINISTRATION PRESCRIPTION AND PHARMACY PROGRAM

Privately owned pharmacies and those operated by Veterans Administration filled a total of some 4,000,000 prescriptions for veteran-patients during 1948, E. Burns Geiger, chief of VA's pharmacy division, estimated.

About half a million of the prescriptions were filled by 25,000 privately operated pharmacies throughout the country, taking part in the VA home-town pharmacy program.

Under agreements between VA and State Pharmaceutical Associations in 46 states, the District of Columbia and Hawaii, private pharmacists have

been authorized to fill prescriptions, at Government expense, for veterans undergoing out-patient treatment for service-connected ailments in VA clinics or with private physicians.

The remaining 3,500,000 prescriptions were filled by 333 pharmacists in VA hospitals, homes and regional offices. VA pharmacies, in addition, supplied large amounts of routine medications to surgical and medical services in the hospitals.

Also, during the past year, VA completed specifications for pharmacies to be built in new hospitals, and revised requirements for hospital pharmaceutical libraries to reflect latest developments in the field.

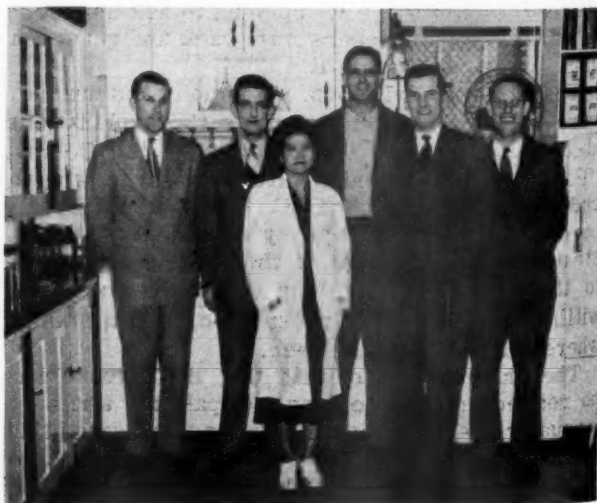
Plans call for new pharmacies to be built in varying sizes, depending upon the number and type of beds the hospitals will contain. The pharmacies will consist of drug preparation rooms and dispensing laboratories.

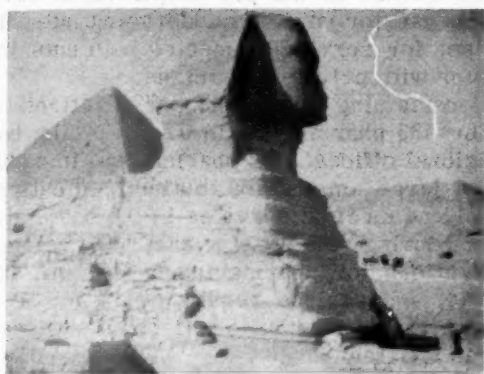
In the preparation rooms, bulk pharmaceuticals will be prepared, ward and clinic orders filled, and other large-scale operations performed. The actual compounding of prescriptions will be done in dispensing laboratories.

Revised requirements for pharmaceutical libraries include a number of new editions of technical volumes.

## INSPECTION OF THE MT. ALTO HOSPITAL PHARMACY

An inspection party consisting of Mr. A. Millis, assistant director of pharmacy service for the VA; Mr. E. Burns Geiger, director of pharmacy service for the VA; Mr. E. G. Myers, acting chief of the pharmacy section, branch number 7; and Mr. W. Spence, chief of the pharmacy section, branch number 4 visited the Mt. Alto Hospital Pharmacy. Many constructive ideas were received by Mrs. Katie Lim, pharmacist and Mr. Eddie Wolfe, chief pharmacist.





### LIFE IN THE LEPROSARIUM

Cairo, Egypt

By

Wilbur C. Anderson  
Chief, Pharmacy Service  
Branch No. 3

Looking north from Camp Huckstep which is approximately fifteen miles from Cairo in Egypt you may be able to discern a patch of trees along the edge of the desert. The trees--about seven miles away--are not far from a garden oasis where a clean, modern little village is thriving. But the village is isolated because the pall of death hangs heavily over the 400 male inhabitants whose affliction the world regards with consternation enough to outcast them from society. Leprosy lives among them, but they appear happy, and actually live a cleaner, better nourished life than many of their fellow Egyptians, for the Egyptian Government has spent much time, money and effort to make this a model leper colony. Lepers from afar have added their names to the waiting list, waiting for a member of the community to die or to have the severest punishment leveled against him--banishment from the colony.

Americans, always curious and skeptical, have visited the camp since its opening to ask questions and stare while the lepers stare back and get much more amusement from it.

The American visitors, physicians and nurses, were greatly enlightened after the explanations about the Camp, by the Director of the Colony, "Pasha Sako" (meaning bird with large wings), and Doctor Mohed Abd El Monieon graciously covered the subject of leprosy with lengthy demonstrations. Each stage of the disease was shown to the group in the colony clinic when subjects willingly uncovered their lesions, or held up stumps where fingers had once been.

The onlookers were told that the disease was no respecter of age or sex, but patients who have it usually live for some time. It was explained that the organism attacks the nerve cells so that sensation is completely lost in the affected area and

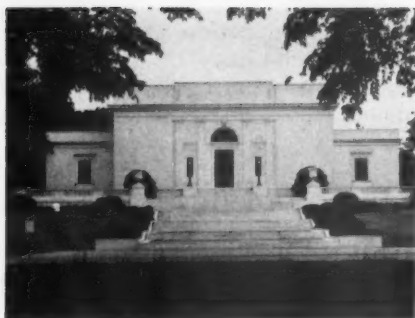
the result is non-regeneration of the damaged body tissues. Those who may be afraid of contracting the disease by coming in contact with a leper can gain assurance from the fact that leprosy is contracted only by continuous association. In Egypt, once you have the disease, there is, at the present time, little hope for cure; Chaulmoogra Oil injections, the only treatment now available in Egypt, will retard its advancement. There is an ancient belief that burning the skin with a hot iron would cure the afflicted. Many patients were seen who had tried this antiquated method of treatment.

The American visitors observed that the life at the Cairo Leprosarium was not uninteresting. All lepers are engaged in some task, no matter how menial; everyone must cooperate. They have their own laundry, with ingenious gadgets to make the work easier; a bakery and tailor shop. A dairy houses the cow-like gamoose, who is used as a beast of burden, for food, and to give milk. Gamoose milk has a 5 per cent butter fat content. The Camp's spacious vegetable garden shows how well the lepers have been able to provide necessary food, while the wood-work and tool shops make and repair numerous articles, from the small trolley-line to furniture and kitchen supplies.

Life here is not all work. The lepers have their entertainment through music broadcast over the area, and plays are staged in a small out-door theater. From modest earnings they are able to make minor purchases from their local "PX" which handles a surprisingly complete stock and even dispenses free tea daily. Schooling may be had at frequent classes for those interested, and many are. Water and electricity are provided by a modern utilities plant that could easily handle a proposed expansion of the colony to provide for several hundred more patients. In fact, the only missing element there now is women; they are kept in a separate leprosarium also near Cairo.

Segregation of lepers in Egypt is not compulsory because of lack of existing facilities to house the 30,000 people believed to have leprosy. Many lepers receive treatment on an out-patient basis from clinics throughout Egypt. Plans are now before the Egyptian Parliament to provide for more leprosariums and eventually to pass a law requiring complete segregation. The incidence of leprosy in Egypt is, however, small compared to that in India, where a leper is an everyday sight.

Doctors at the Colony hope to improve on the present Chaulmoogra Oil treatment by obtaining some of the more recent drugs used in this field from the United States. In the meantime, the lepers lead the happiest lives possible under the circumstances.



# HOSPITAL PHARMACY DIVISION

## AMERICAN PHARMACEUTICAL ASSOCIATION

By Robert P. Fischelis

In the January-February issue of the Bulletin, we covered some of the activities which are under way or planned for the Hospital Pharmacy Division. Reference was made to the information service, employment information, library service, and surveys of hospital pharmacies. Additional services now available and in contemplation include the following:

### 5. PREPARATION AND DISTRIBUTION OF PLANS FOR HOSPITAL PHARMACY CONSTRUCTION

While certain routine services are available in this category, hospital pharmacy administrators differ in their demands for information of this kind because of the variation in the kinds of hospitals which have to be served. At the moment, the U.S. Public Health Service and some independent architects have made available floor plans for pharmacies in hospitals of varying bed capacity. As more information becomes available through the work of the hospital construction program and as members of faculties of hospital pharmacy institutes bring to the attention of practicing pharmacists their ideas of layout and construction, this service will be expanded.

### 6. HOSPITAL PHARMACY INSTITUTES

Full cooperation will be given by the Division to the plans of the American Hospital Association for two hospital pharmacy institutes in 1949. We will also cooperate fully with the A.S.H.P. in the preparation of its program for the Jacksonville meeting in April, 1949 and the Atlantic City meeting in 1950.

### 7. EXHIBITS

Hospital pharmacy exhibits are being planned in connection with national and district meetings so that full advantage may be taken of every opportunity to educate hospital administrators on the advantages of a well-organized hospital pharmacy.

The American Hospital Association has invited the Division to again arrange an exhibit in the Scientific and Educational Section at the next meeting of this Association which will be held in Cleveland, Ohio, from September 26 to 29.

Last year an exhibit was arranged at the Atlantic City meeting of the Association which attracted considerable attention and which outlined the services of pharmacists to the hospital organization in general and also reviewed the educational and licensure requirements for pharmacists.

### 8. PHARMACEUTICAL SURVEY ACTIVITIES

From time to time various agencies in the health and medical field undertake surveys of existing services and institutions. We have had surveys of medical education in which hospital practice and facilities played an important part. We have had hospital surveys in which the various hospital functions were reviewed and studied with an eye to the improvement of these services. In general, very little has come out of such surveys which affected pharmacy specifically. More recently, the "Findings and Recommendations of the Pharmaceutical Survey" have been made public and they give very little attention to hospital pharmacy as such. Recommendations made by the Survey along various lines, of course, have hospital pharmacy implications but to date there has been no complete study of hospital pharmacy activities by any survey group. It is expected that when the minimum standards for hospital pharmacy practice are adopted that a few sample inspections will be made in hospitals of various sizes and specialties so as to determine the practicability of the standards adopted. It may be necessary to modify some of these standards in the light of the findings of such inspections. When the results of these preliminary surveys become known, an effort will be made to inspect and classify hospital pharmacies in accordance with the extent to which they meet the minimum standards laid down. Hospital administrators will then be in a position to determine how much im-



provement is required to bring their hospital pharmacies into line with the minimum requirements for good hospital practice. This is one of the most important functions to be undertaken by the Division and the budget for 1949 has been set up to allow for travel expense to accomplish a sufficient number of inspections on which to base future activities in this field.

## 9. CONTACT WITH GOVERNMENT AGENCIES

Hospital pharmacy is an important factor in the armed services and in the Public Health Service and the Veterans Administration. Through the directors of pharmacy activities in these agencies, the Division maintains a close contact with personnel and service problems.

The Civil Service status of pharmacists as far as the Federal government is concerned is now definitely on a professional basis and it is important that it be kept there and that opportunity be given for development of activities which require training beyond the ordinary minimum pharmacy course. There are openings in these agencies for pharmacists who have pursued graduate studies and who can give instruction and advice on extraordinary problems. Pharmacists who have made hospital pharmacy a graduate study are still in the minority but demand for them is continually on the increase. In the Army, for example, we have a Pharmacy Supply and Administration Section in the Medical Service Corps. It is expected that eventually all of the commissioned officers in this Section of the Corps will be pharmacists and if some of these can be men with graduate training, their opportunities for advancement through the development of research and administration projects will be greatly enhanced.

As the problems of the National Security Resources Board and the Civil Defense Planning Office are developed, it is certain that hospital pharmacists will be given greater responsibility especially in the larger institutions. It is the objective of the Division to continually maintain close touch with the executive officers in these agencies so that any development having a pharmaceutical aspect may be brought to our attention early enough to have pharmacy make a contribution at the formative stage of any project. In this respect, the Division is fortunate to have the benefit of advice and research of all members of the A.Ph.A. staff who contact these agencies in the course of their regular duties.

## GENERAL CONSIDERATIONS

Members of the American Society of Hospital Pharmacists are always interested in what the

Division is doing at the moment. These progress reports are intended to cover such information. However, hospital pharmacy is today in a position where the average administrator judges the activities of the pharmacy not by the potentialities of pharmaceutical service but by what is being done in his own hospital by his own pharmacist. This is being shown very clearly in recent correspondence with hospital administrators.

We have addressed a letter outlining the activities of the American Society of Hospital Pharmacists and the Division of Hospital Pharmacy to all of the members of the American College of Hospital Administrators. The comment that is being received from these administrators shows clearly how greatly pharmacy has been neglected in some institutions and how well the services have been worked out in others. There is no substitute for the personal effort of a hospital pharmacist in each institution.

At the various institutes during the last three years it has been made clear again and again that one of the best media for keeping administrators informed on the importance of the hospital pharmacy is the annual report of the pharmacist to the organization. This annual report can be divided into a series of quarterly or even monthly reports and thus multiply the formal contacts between the administrator's office and the hospital pharmacy. It is not good judgment to report too often and it is equally poor judgment not to report enough. We believe that a quarterly report stating on one page the projects which have been completed, the projects which are under way and the projects contemplated, followed by an elaboration of each of these categories, is an absolute necessity. Once this series of reports has been established and made a routine procedure, it is, of course, necessary to occasionally dramatize an unusual piece of work. Administrators like to talk about the accomplishments of their institution. They will not talk about the accomplishments of the pharmacy if someone does not call these accomplishments to their attention at regular intervals.

The Division has endeavored by means of a comprehensive letter to call the attention of the administrators to the services which are available to the hospital pharmacist and the administrator from this office. This letter will be followed by others at fairly regular intervals and they are intended to emphasize to the administrator how far pharmacy has gone along the way in its endeavors to keep pace with the other health professions.

# INTERNSHIPS

## *in Hospital Pharmacy*

Edited By

O. James Inashima, Senior Pharmacy Intern  
Jefferson Medical College Hospital, Philadelphia

This new section, "Internships in Hospital Pharmacy" has been added to THE BULLETIN beginning with the January-February 1949 issue, with the purpose of presenting information on hospital pharmacy internships to pharmacists expressing interest in these programs, and to help maintain a high standard of training in the various internships currently offered or in any contemplated programs.

There are four types of training programs presently functioning in the United States. They are as follows:

1. one or more years of informal internship in a progressive hospital pharmacy,
2. formal internship of one year duration,
3. two years of internship concurrent with graduate instruction leading to the Master of Science degree,
4. one year of graduate instruction in hospital pharmacy leading to the Master of Science degree.

It is the editor's desire to present in future issues of THE BULLETIN the various internship and graduate study programs that are being offered, and to include biographical sketches of those receiving training in such programs. The true worth of any educational system is measured not by its theoretical aspects, but by the quality of students who have studied under the system. Those persons graduating this year from the graduate study-internship programs represent in most cases the initial group or at most the first few classes that have graduated from such programs. The value of this type of training program will be determined within the next few years. The benefit of internships is already proven and is evidenced by the number of youthful leaders in hospital pharmacy today who have trained under such programs. The new graduates too will be worth watching, for from them should come many capable leaders in this field.

The editor hopes that he can be of some value in promoting better and higher standards in the internship programs and through this means aid in improving hospital pharmacy in general. It is felt that by affording a wide exchange of information, views, and problems, and by comparing the different types of programs in effect and presenting

answers to the difficulty arising from the many conditions that exist, this section in some measure can attain such a goal.

Information is available, to date, on eighteen institutions presenting training programs in hospital pharmacy and undoubtedly there are more programs existing. Two types of formal internships are presently in effect. One consists of a non-academic one year straight internship. The other is a two-year academic internship in which academic work and on-the-job hospital training is taken concurrently. There is another type of training program offered which is not an internship but, consists of one full year of academic graduate study in hospital pharmacy. Of the eighteen institutions ten are in the first category, seven are in the second classification, and two are in the last group. One institution offers both academic and academic-internship training.

Institutions offering training in hospital pharmacy are listed as follows:

I - indicates a non-academic one-year straight internship program.

AI - indicates a two-year graduate study-internship program.

A - indicates a one-year graduate level course in hospital pharmacy.

I - Queen of Angels Hospital, Los Angeles, California

AI - University of California, San Francisco, California (with the University Hospital)

I - Grace New Haven Hospital, New Haven, Connecticut

I - Jackson Memorial Hospital, Miami, Florida.

AI - University of Illinois, Chicago, Illinois (with the Research and Educational Hospitals)

A - Purdue University, West Lafayette, Indiana

AI A - University of Iowa, Iowa City, Iowa (with the University Hospital)

AI - University of Maryland, Baltimore, Maryland (with the Johns Hopkins Hospital)

AI - University of Michigan, Ann Arbor, Michigan (with the University Hospital)

I - Duke University Hospital, Durham, North Carolina

I - St. Mary's Hospital, Brooklyn, New York

I - The New York Hospital, 525 E. 68 Street, New York City, New York

I - Huron Road Hospital, Cleveland Ohio

I - St. Luke's Hospital, Cleveland, Ohio

I - Western Reserve University Hospital, Cleveland, Ohio

I - Mercy Hospital, Toledo, Ohio

AI - Philadelphia College of Pharmacy and Science, Philadelphia, Pennsylvania (with the Jefferson Medical College Hospital)

AI - University of Wisconsin, Madison, Wisconsin

This list is by no means complete and the editor will be pleased to hear from other institutions offering internship and/or graduate training in hospital pharmacy.

The editor would also like to prepare a roster of interns and graduate students in hospital pharmacy. Every person in this category should write his name on a penny postal and mail to Mr. O. James Inashima, Senior Intern Pharmacist, Jefferson Medical College Hospital, Philadelphia 3, Pa. Information as to the name of institution and expected date of completing the course should

be included. In other words, it should be possible, through medium of this section of THE BULLETIN to present to hospital administrators and to other interested parties, the name and address of every person who will be eligible and qualified for the position of chief pharmacist by virtue of internship and/or graduate study in hospital pharmacy.

Correspondence with the many former interns would also be appreciated so that a roster may be prepared of hospital pharmacists in this category. For those persons who have served an internship or who have completed graduate study in hospital pharmacy, a penny postal with the name of the hospital or school of origin and with the name of your present institution or affiliation, should be sent to Mr. Inashima.

#### 1949 GRADUATES

There are four persons who in June 1949 will have the distinction of being the first to successfully complete a training program of graduate study presented concurrently with a formal internship in hospital pharmacy. These four persons, though not the first to obtain the M. S. degree for majoring in hospital pharmacy, are the first to receive the M. S. degree for course work taken during a two year period of cooperative hospital pharmacy internship and graduate study. It is thought that such programs are a definite step forward in raising standards for the practice of pharmacy in hospitals.

The Johns Hopkins Hospital began its program in the summer of 1947 as did Jefferson Medical College Hospital. Hopkins accepted four persons and Jefferson accepted only one. At that time, and at the present, both institutions were more concerned with quality of applicant than with quantity of interns. Though this is a small beginning, it is of interest to note that this summer there will be opportunities for about thirty persons, possessing the B. S. degree, to enroll in graduate study courses in hospital pharmacy.

The following persons will receive their M. S. degree in June 1949 and will also receive a certificate for internship in a hospital pharmacy: Miss Betty Katherine Job, Mr. Joseph J. Piala, Miss Louise M. Pope and Mr. O. James Inashima.

See next page





Mr. O. James Inashima was born in Seattle, Washington in 1922 and attended one year of college at the University of Washington, Seattle, in 1941. He obtained his Bachelor of Science degree in Pharmacy from Idaho State College at Pocatello, in 1947. Idaho is now claimed as his home. During the war he served two years in the Infantry Military

Intelligence Language Corps and saw service in the Philippines and in the Occupation of Japan. He now holds a rank as second lieutenant in the Medical Service Corps Reserve. Mr. Inashima will be the first and the only intern graduating in June of this year from the two year graduate study-internship at the Jefferson Medical College Hospital in cooperation with the Philadelphia College of Pharmacy and Science. He is currently chairman of the New Drugs Committee of the Philadelphia Hospital Pharmacists' Association and a member of the Philadelphia Branch of the American Pharmaceutical Association. His research project is to develop a desirable repository form for heparin.



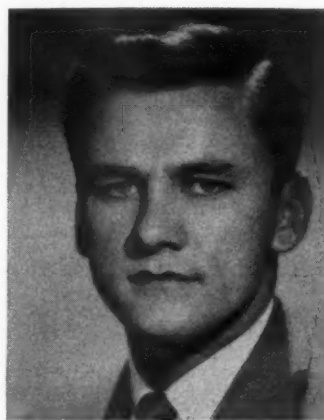
Miss Betty Katherine Job was born in 1925 at Kokomo, Indiana. She obtained her Bachelor of Science degree in Pharmacy from Purdue University in 1945. She is one of the three senior interns at the Johns Hopkins Hospital in Baltimore. Previous to her internship she worked in retail stores in Kokomo and Indianapolis, Indiana. Miss Job is a member

of the Baltimore Branch of the American Pharmaceutical Association and belongs to the Rho Chi sorority. Her projects for research are: (1) - to develop a pregnancy test using male frogs, and (2) - to make a survey of manufacturing equipment used in hospital pharmacies. Her paper "The Male Frog, *Rana Pipiens*, As a Test Animal for Pregnancy", was presented in December 1948 to the house staff in Gynecology and Obstetrics at the Johns Hopkins Hospital. In June 1949, on completion of graduate study and internship in hospital pharmacy, Miss Job will receive the Master of Science degree in Pharmacology from the University of Maryland.



Miss Louise M. Pope, born in 1925 at Pauls Valley, Oklahoma is one of the three senior interns at the Johns Hopkins Hospital, Baltimore, Maryland. She was graduated by the University of Oklahoma School of Pharmacy in 1947 with a Bachelor of Science degree. Her experience in pharmacy previous to the internship was in a number

of retail stores and as a laboratory assistant at the University of Oklahoma School of Pharmacy. She is a member of the Lambda Kappa Sigma sorority and has held the position of President and Treasurer of this organization. Miss Pope's research project is on use of wetting agents in the preparation of aromatic waters. On completion of graduate study and internship in June 1949, she will receive the Master of Science degree in Pharmacy from the University of Maryland.



Mr. Joseph J. Piala, one of the three senior interns at the Johns Hopkins Hospital in Baltimore, was born in 1922 in Carrollville, Wisconsin. He received his Bachelor of Science degree in Pharmacy from the University of Wisconsin in 1947. He was a member of the University of Wisconsin Pharmaceutical Society and held the office

of Vice-President in 1942 and the position of President in 1943. He was also a member of the Wisconsin Pharmaceutical Association. Mr. Piala attained the rank of first lieutenant in the Air Force and saw service in the China-Burma-India Theater and the Western Pacific Theater. On completion of his internship, in June 1949, he will receive a certificate of internship from Hopkins but is foregoing the M.S. degree to carry on work for a Ph.D. at the University of Maryland.

# pharmacy and

# public health

## VOLUNTARY vs COMPULSORY MEDICAL CARE PLANS

There are many interesting commentaries on these two types of medical care plans. At the moment it seems as though whichever plan triumphs, or whatever the ultimate form of operation and control is destined to be, the pharmacist engaged in hospital practice will become more essential to the practice of medicine than ever before. Let us not be too smug, however, in our views of the future, for as these various plans develop, so our responsibilities increase and our concepts of operation and control must necessarily change somewhat. In almost every large metropolis today, we hear hospital administrators talking in terms of diagnostic clinics and prepaid medical care plans including physician fees and diagnostic and hospital costs. How many hospital pharmacists are cognizant of these plans and are fortifying themselves with information against the time when such plans will be presented to them for integration of pharmacy services? It is hoped the number is larger than estimated. How many hospital pharmacists have reviewed the Truman and the American Medical Association plans for medical care of the nation's population?

For those interested, and it should be every one of us, the following literature references will present good reading:

1. "A Brief on Compulsory Health Insurance Under Federal Legislation," pages 29-47, Hospital Management, January 1949.
2. "No Advertisement For State Medicine," page 4, Hospital Management, February 1949.
3. "A New Plan in Baltimore For Indigent Medical Care," page 37, Hospitals, September 1948.
4. "What's Happening In The Medical Care Field," page 96, J. Am. Pharm. Assoc., Practical Edition, February 1949.
5. "National Reaction To American Medical Association Twelve Point Program," page 88, American Druggist, March 1949.

It is of interest to note that the Board of Trustees of the American Hospital Association has

formally resolved that a program of federal compulsory health insurance is inadvisable at this time.

## PRESCRIPTION REFILLS

A recent survey of practices in hospitals regarding the refilling of prescriptions showed that except for a small minority, no prescription is refilled without express approval from the physician. This approval can be in the form of another prescription requesting refill of the original, or by the physician specifically stating on the original prescription that it should be refilled a specified number of times.

The following references from a communication from the FDA are pertinent to this subject:

1. "We have expressed the opinion that the refilling of a prescription without authority of the prescribing physician is simply an over-the-counter sale, which bears no legitimate relationship to the original prescription. A drug so dispensed is not entitled to the exemptions from certain labeling requirements which apply to drugs sold on prescription."

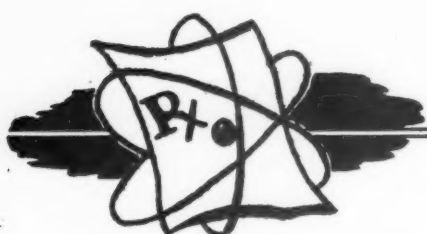
2. "One of the requirements of the law is that the label of a drug shall bear adequate directions for use and where needed for the protection of the user, warnings against misuse. In the case of a drug for which directions for safe and effective lay use, without medical supervision, cannot be written, the manufacturer is permitted by regulation to omit directions and label the article "Caution: To be dispensed only by or on the prescription of a physician." The pharmacist who sells a drug so labeled otherwise than on a prescription defeats the purpose of the regulation and deprives the purchaser of the protection afforded by the terms of the law. The courts have held that such sales are illegal."

### TAX FREE ALCOHOL

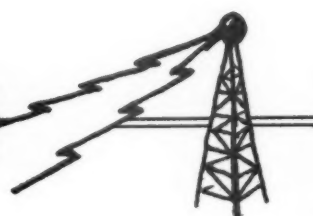
A bulletin from the Washington Service Bureau of the American Hospital Association to member hospitals has recently warned of the dangers of using tax-free alcohol in any circumstance where it is an ingredient in a preparation that is for sale. Despite the fact that Sec. 3108 of the regulations which is the offending part, requires additional expense to be involved in the dispensing of drugs

to the indigent and other outpatients, by payment of tax, it is still a part of the law and must be adhered to.

Hospital pharmacists should review their dispensing procedures to make certain that no violation of this act is involved. Hospital pharmacists and administrators should also review this offending section to ascertain the advisability of initiating legislation to have an exception made for non-profit hospitals.



## NEWS ITEMS



### JACKSONVILLE CONVENTION

Hospital Pharmacists from all over the country will attend the annual meeting of the American Society of Hospital Pharmacists which is held in conjunction with the convention of the American Pharmaceutical Association. The A.S.H.P. meeting will open on Sunday night with the House of Delegates meeting which will be attended by representatives from local A.S.H.P. Chapters and the Executive Committee. During Monday and Tuesday a business session will be held and papers will be presented. Included on this year's program are:

1. "Thirty Months of the Pharmaceutical Survey in Thirty Minutes" - W. Paul Briggs.
2. "Survey of Internship Programs" - Herbert Flack.
3. "A Study of Ophthalmic Ointments" - Milton Skolaut.
4. "Research Bacteriology and Its Relation to Hospital Pharmacy" - George A. Valley.
5. "Drug Therapy of Today" - Austin Smith.
6. "Personnel Policies and the Hospital Pharmacist" - Joseph O. Barry.
7. "Hospital Pharmaceutical Service Audit" - J. R. McGibony, M.D., U. S. Public Health Service.
8. "A New Disposable Automatic Injection Device" - W. W. Hosler and Walter F. Wargell.
9. "A Study of the Germicidal Value and Use of Dihydroxy-Hexachloro-Methane (G-11)" - Sister Mary John.

Highlighting the business session will be the report of the Committee on Minimum Standards and final approval of the standards as proposed by the A.S.H.P. Committee. Included also will be reports of the officers and various committee chairmen and the Director of the Division of Hospital Pharmacy. A breakfast for hospital pharmacists is scheduled for Tuesday morning at which time the group will have an opportunity to be together for an informal discussion.

Following the meeting of the American Society of Hospital Pharmacists and other affiliated organizations on Monday and Tuesday, the A.Ph.A. sections will meet during the rest of the week at which time many papers of current interest to pharmacists will be presented.

### UNIVERSITY OF ILLINOIS OPENS NEW HOSPITAL PHARMACY

A branch of the hospital pharmacy of the University of Illinois was recently opened at the Illinois Eye and Ear Infirmary in Chicago. The new pharmacy will serve the out-patient clinic and the hospital. Out-patient visits to the Illinois Eye and Ear Infirmary totaled 87,000 during the past fiscal year. An additional 3,850 patients received treatment in the 127-bed hospital.

Many time-saving devices have been incorporated in the pharmacy. They include several specially-designed units, including one to store pre-packaged tablets, vitamins, and ophthalmic



solutions, a specially-designed stainless steel refrigerator with accessible drawers for the storage of biologicals and pharmaceuticals, a liquid dispensing unit, and an ointment preparation unit.

The new unit was designed by Dr. Earl R. Serles, Dr. Byrl E. Benton, and William R. Collins of the University of Illinois College of Pharmacy, in accordance with an analysis of the type of professional service that the Infirmary requires. Two registered pharmacists will staff the new pharmacy.

#### POINT RATING SYSTEM DISCUSSED AT A. C. S. MEETING

Representing pharmacy at the meeting of the American College of Surgeons in Washington on March 15th, Dr. W. Arthur Purdum discussed the pharmacy department in relation to other hospital departments and application of the A.C.S. Point Rating System. Included on the forum were representatives from all hospital departments to discuss "Application of the Point Rating System in Hospitals under the Hospital Standardization Program."

On applying the Point Rating System, Dr. Purdum recommended that the pharmacy be removed from the "Adjunct and Service Divisions" and placed under "Essential Divisions." According to the present system the pharmacy department is allotted ten points or one percent of the total. Although Dr. Purdum pointed out that he felt that the pharmacy contributes far more than one percent to the proper care of the patient, he emphasized that the number of points assigned to any department is relatively unimportant but suggested that a more extensive breakdown of the points allotted to the pharmacy department would be advisable. He further suggested that this would be done in connection with the proposed minimum standards, since it is hoped that the new standards will be accepted by the American College of Surgeons in the near future.

#### MAJOR PAINTER APPOINTED CHIEF OF PHARMACY SECTION, MEDICAL SERVICE CORPS

The Department of the Army has announced the appointment of Major John Painter as Chief of the Pharmacy Section of the recently established Medical Service Corps.

Major Painter was integrated into the Regular Army in 1938 as a pharmacist in the Medical Administration Corps following a competitive professional examination. After training at Carlisle Barracks Medical Field Service School and at the

Army Medical Center in Washington, D. C., he rendered distinguished service in a number of administrative and supply assignments. As Executive Officer of the St. Louis Medical Depot, he was commended by Major General Norman W. Kirk, the Surgeon General, for outstanding performance of his duties. In October 1945, Major Painter was made Chief of Medical Supply of the Far East Command and moved with General MacArthur's Headquarters from Manila to Tokyo, where he remained until called to the Surgeon General's Office in December 1948, to serve as Chief of the Overseas Section, Distribution Branch of the Supply Division. He holds a B. S. degree in pharmacy, and is a native of St. Paul, Minnesota. He is a member of the American Pharmaceutical Association.

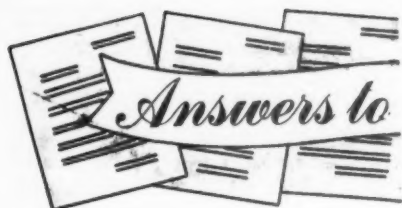
#### CANADIAN HOSPITAL PHARMACISTS

More than forty hospital pharmacists in Canada are now members of the Canadian Society of Hospital Pharmacists which was organized only a year ago. Most members are from Ontario with an additional few from British Columbia and Newfoundland. Canadian Pharmacists pay ten dollars the first year and five dollars each year thereafter to be members of this group. Associate members pay one-half this amount. Mr. Gordon R. Smith, Hamilton General Hospital, Hamilton, Canada has been active in organizing this group and is now president of the society.

The Canadian Hospital Pharmacists also have a publication, "The Hospital Pharmacist," which is edited by P. C. Statia, chief pharmacist at Kitchener-Waterloo Hospital in Kitchener, Ontario. This bulletin carries abstracts of interest to hospital pharmacists, articles on new drugs and formulas for manufacturing in the hospital pharmacy.

#### APPRENTICE CREDIT

The State of California recently revised its Pharmacy Laws to allow full time for practical experience for licensure, obtained in "hospital pharmacies which fill prescriptions for patients." Only part-time is allowed for experience obtained in "small hospitals with drug rooms who fill orders only." Thus another State Board falls in line with recommendations of the N. A. B. P.



# QUERIES

EDITED BY EVLYN GRAY SCOTT, CHIEF PHARMACIST,  
ST. LUKE'S HOSPITAL, CLEVELAND

The following list answers "Queries" concerning how to obtain the following items:

- |   |  |
|---|--|
| Benzodioxane (experimental) . . . . .                   | Merck & Co., Rahway, N.J.  |
| Bismuth tribromphenate . . . . .<br>(now available)     | Merck & Co., Rahway, N.J.  |
| Celons (secondary closures) . . . . .                   | The Celon Co., Madison, Wis.   |
| Cel-O-Seal (secondary closures) . . . .                 | E. I. Dupont de Nemours & Co., Wilmington 98,<br>Del.  |
| Cabinets (Schwartz type) . . . . .                      | Schwartz Sectional System Co., Indianapolis, Ind.<br>Grand Rapids Show Case Co., Grand Rapids,<br>Mich.  |
| G-11 (Hexachlorophene)<br>Contained in:                 |  |
| (1) Formula 99 (liquid<br>hand soap) . . . . .          | Armour Company, Chicago 9, Ill.  |
| (2) Dial (cake soap) . . . . .                          | Armour Company, Chicago 9, Ill.  |
| (3) pHIsoderm (liquid) . . . . .                        | Winthrop-Stearns, Inc., 170 Varick St., New<br>York 13, N.Y.   |
| i-Inositol . . . . .                                    | Corn Products Sales Co., 17 Battery Place,<br>New York, N.Y.   |
| Nitrogen Mustard (experimental) . . . .                 | Merck & Co., Rahway, N.J.  |
| Ointment Mill - small . . . . .                         | Stokes' Machine Co., 4912 Summerdale Ave.,<br>Philadelphia 24, Pa.<br>Eppenbach, Inc., 4570 Nervin Blvd., Long Island<br>City 1, N.Y.<br>J. H. Day & Co., Cincinnati, Ohio |
| Purdum-Gregorek Dilutor . . . . .                       | Baltimore Biological Lab., 1640 Gorsuch Ave.,<br>Baltimore 18, Md.   |
| Phthalylsulfacetimide . . . . .                         | Schering Corp., Bloomfield, N.J.   |
| Rubber sleeve or skirted stoppers. . .                  | Eberbach & Sons, Ann Arbor, Mich.  |
| Roccal 10 percent . . . . .                             | Winthrop Co., 170 Varick St., New York 13, N.Y.  |
| Sharkskin Filter Paper . . . . .                        | Carl Schleicher & Schuell Co., 116 W. 14th St.,<br>New York, N.Y.  |
| Sorbitol derivatives - (1) Spans. . . . .<br>(2) Tweens | Atlas Powder Co., Industrial Chemicals Dept.,<br>Wilmington 99, Del  |

A s  
being  
neerir  
11, M  
Sharp  
for sc  
Two  
the m  
#1, #  
The p  
Sin  
or 14  
capsu  
manu  
POSIT  
edge,  
own,  
CIST.

Syringe-Opener #26 . . . . .	Becton, Dickinson & Co., Rutherford, N.J.
Spatulas-stainless steel. . . . .	Central Scientific Co., 1780 Irving Park Rd., Chicago, Ill.
Scoopula & Handle . . . . .	Fisher Scientific Co., 717 Forbes St., Pittsburgh 19, Pa.
Tergitol Wetting Agents. . . . .	Carbide & Carbon Chemicals Corp., 30 E. 42nd St., New York, N.Y.
Toluidine Blue (experimental). . . . .	Lakeside Lab. Inc., Milwaukee 1, Wis.
Zephiran 12.8 percent . . . . .	Winthrop Co., 170 Varick St., New York 13, N.Y.
"The Aseptic Treatment of Wounds" by Dr. Carl W. Walter . . . . .	MacMillan Co., New York, N.Y.

\*\*\*\*\*

### CAPSULE MACHINE AVAILABLE

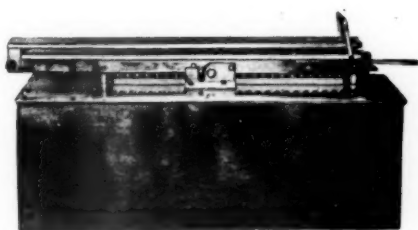
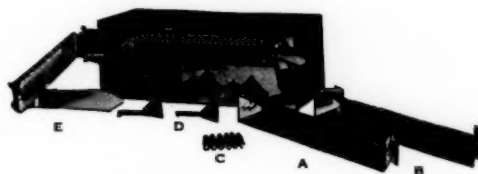


photo above shows machine closed with all accessories concealed inside box



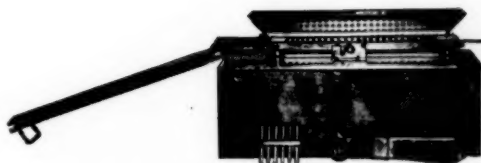
complete view showing trough (a) for #0 & #1, (b) for #2 & #3, pegs (c) for packing, dividers (d) for filling less than 24 and roller (e)

### CAPSULATING MACHINE

A semi-automatic capsulating machine is now being sold by Del-Tay Manufacturing and Engineering Company, 3201 Fallscliff Road, Baltimore 11, Md. This machine was formerly sold by Sharpe and Dohme but has been off of the market for some time.

Twenty-four capsules can be filled at once with the machine illustrated. It can be used with #0, #1, #2 and #3 size capsules, one size at a time. The price is \$125.00.

Similar, larger machines can be used to fill 96 or 144 capsules. Brochures describing all these capsulating machines may be obtained from the manufacturer.



ready for filling 24 capsules with trough in position

**POSITION WANTED:** REGISTERED PHARMACIST with broad scientific background, up-to-date knowledge, best references of physicians and exclusive Rx-pharmacies, huge professional library of his own, five years European hospital practice, teaching ability, wants position as HOSPITAL PHARMACIST. Write to this Journal under R.P. 1239.



# Fourth Institute On Hospital Pharmacy

Hospital pharmacists in the Western States will have an opportunity to attend the fourth institute on hospital pharmacy being held on the University of California campus in Berkeley during the week of June 27. Since this is the first time a meeting of this type, designed particularly for practicing hospital pharmacists, has been held in the West, an outstanding meeting is anticipated. The American Hospital Association, the American Pharmaceutical Association and the American Society of Hospital Pharmacists are again conducting the institute and sponsoring organizations include the Association of California Hospitals; the Association of Western Hospitals; the Northern California Society of Hospital Pharmacists; and the Southern California Chapter of the American Society of Hospital Pharmacists.

In cooperation with the hospital pharmacists in California, President Purdum has planned a program which is designed to aid the hospital pharmacist to meet his responsibilities in the manage-

ment of the pharmacy department. Emphasis will be placed on special problems such as the manufacture of solutions and pharmaceutical preparations, interprofessional relations, administration of the hospital pharmacy, sterilizations processes, self-sterilizing ophthalmic solutions, and the use of radioactive isotopes in therapy. A panel discussion led by the faculty members will follow each day's program. This will give the institute enrollees an opportunity to present their questions to the group.

Convenient housing arrangements for those attending the institute have been provided at the Oldenberg-Richards Halls on the University of California campus. Meetings, as well as housing and meals, will be taken care of in these buildings. To make application for the institute write to C. T. Dolezal, M.D., Assistant Director, American Hospital Association, 18 East Division St., Chicago 10, Illinois.

## Program

### MONDAY, JUNE 27

8:00 to 9:45 A. M.

Registration - Oldenberg-Richards Halls

Chairman: Troy Daniels

10:00 to 10:30 A. M.

Greetings to the Institute:

Association of Western Hospitals...A. A. Aita  
American Hospital Association.....Anthony J. J. Rourke, M. D.  
American Pharmaceutical Association.....Robert P. Fischelis  
American Society of Hospital Pharmacists.....W. Arthur Purdum  
Pharmacists of California.....Linnett M. Walsh

10:30 to 11:30 A. M.

The Hospital Pharmacist in Public Health and Preventive Medicine

Stafford Warren, M. D.

or

Dean Edward S. Rogers, School of Public Health, University of California

1:30 to 2:15 P. M.

Does it Pay to Engage in Pharmaceutical Manufacturing in a 100 Bed Hospital?

Dwight L. Oliver

The discussion will cover preparations readily prepared in an institutional pharmacy of the size mentioned. Slides will illustrate equipment for non-sterile manufacture. Specific formulas with full directions and cost computations will be distributed.

2:30 to 3:15 P. M.

Tablet Equipment and Manufacture

Stephen J. Dean, Jr.

Slides will demonstrate equipment, and specific formulas will be distributed for various tablet formulations. Advantages and limitations of tablet manufacture in hospitals will be discussed.

3:30 to 4:15 P. M.

The Application of Pharmacy Laws to the Hospital

Linnett M. Walsh

A discussion of the legal responsibilities, Federal and State, of the hospital pharmacist.

4:30 to 5:00 P. M.

The Manufacture of Non-Pharmaceutical Preparations for the Hospital

Ralph E. Wieland

Substantial economies may be effected through the home manufacture of various products in common usage in all hospitals. Examples include the preparation of flavors for the dietary department, stain remover for the laundry, door check fluid for the engineering department, and ink, mucilage and paste for the stationery department.

Evening

Informal Social Hour

### TUESDAY, JUNE 28

Chairman: Jerome M. Yalon

8:30 to 9:15 A. M.

The Use and Abuse of Drugs in Hospitals

Anthony J. J. Rourke, M. D.

9:30 to 10:15 A. M.

## The Present Status of Antibiotics in Therapy

Austin Smith, M. D.

10:30 to 11:30 A. M.

## Question Period on Therapeutics

Questions submitted by those in attendance will be answered by the previous speakers.

1:30 P. M.

## Conducted Tour of Cutter Laboratories

Of especial interest to hospital pharmacists will be the departments for the preparation of intravenous solutions and allergenic extracts.

7:00 to 9:00 P. M.

## Panel Discussion and Demonstration:

## Time-Saving Devices for the Hospital Pharmacy

Chairman: Claude Busick

Alice M. Appel  
Don E. Francke  
John M. Gooch

Jack S. Heard  
Lloyd E. Jones  
W. Arthur Purdum

Slides will be shown or actual demonstrations given of ingenious devices developed by hospital pharmacists to promote efficiency and economy in the pharmacy. Such devices range from gadgets of a simple nature to modified automatic apparatus.

\* \* \*

## WEDNESDAY, JUNE 29

Chairman: Charles T. Dolezal, M. D.

8:30 to 9:00 A. M.

## "Workshop" on Hospital Pharmacy Administration and Policy

Enrollees will be divided into four groups with temporary chairmen. Each group will choose one of the following topics dealing with pharmacy administration and policy:

## 1. The Therapeutics Committee and the Hospital Formulary

## Suggestions for discussion:

- Membership of the committee
- The pharmacist as chairman and/or secretary of the committee.
- Types of formularies
- Policies governing admissions to and deletions from formulary.
- Advantages of formulary standardization

## 2. Purchasing for the Hospital Pharmacy

## Suggestions for discussion:

- Pharmacist - purchasing agent relations
- Sources of supply

- Quality specifications
- Turnover
- Market trends
- Cooperative buying agencies
- Purchase and inventory records

## 3. Out-Patient Pharmacy Service

## Suggestions for discussion:

- Location of the out-patient pharmacy. Should facilities be a part of or separated from the central hospital pharmacy?
- Equipment
- Policies controlling refilling of prescriptions
- Control over prepackaged prescriptions
- Private out-patient prescriptions

## 4. Records, Reports and Accounting Procedures for the Pharmacy

## Suggestions for discussion:

- Alcohol and narcotic records and reports
- Cash records
- Reports to the administrator
- Manufacturing records
- Record of disbursements to nursing units and other hospital departments.

## 5. Charges for Drugs

## Suggestions for discussion:

- Pricing schedules for ward, semi-private and private patients
- A single scale of charges for all categories of patients
- Should savings resulting from quantity buying be passed on to the patient?
- What drugs, if any, should be charged for in hospitals operating under the inclusive rate plan?

In order to be sure that four of the topics are covered the program chairman will approve group selections.

9:30 to 11:30 A. M.

Group discussions. The choice of topic will include the person who will function as permanent chairman.

1:30 to 2:15 P. M.

Chairman: Henry W. Beard

## Self-Sterilizing Ophthalmic Solutions

Jerome M. Yalon

The lecturer will review present concepts of eye medication preparation including distribution and control in the hospital. A newer procedure for preparing stable eye solutions will be discussed. Specific formulas with directions for their preparation will be distributed.

2:30 to 3:15 P. M.

## The Manufacture of Miscellaneous Pharmaceuticals

Francis R. Spinelli

Specific formulas, equipment and economics concerning this activity will be detailed. Slides or actual equipment will be shown to illustrate the activities discussed. Formulas with full directions will be distributed.

3:30 to 4:15 P. M.**Research in the Hospital Pharmacy**

Elmer M. Plein

A discussion of research accomplishments by hospital pharmacists and research opportunities in the hospital pharmacy.

Evening

Chairman: Charles T. Dolezal

7:00 to 7:30 P. M.

Oral summaries of the discussion and decisions reached in two remaining groups.

8:30 to 9:00 P. M.

Review of each report by a second panel, made up as above but with new participants.

\* \* \*

THURSDAY, JUNE 30

Chairman: Charles G. Towne

8:30 to 9:15 A. M.**The Teaching and Interprofessional Relations Responsibilities of the Hospital Pharmacist**

Elmer M. Plein

9:30 to 10:15 A. M.**New Standards for the Hospital Pharmacy**

Don E. Francke

A comparison of the new minimum standards for hospital pharmacies prepared by the committee on minimum standards of the American Society of Hospital Pharmacists with the older standards recognized by the American College of Surgeons.

10:30 to 11:15 A. M.**Internships in Hospital Pharmacy**

W. Arthur Purdum

A discussion of internship programs in operation and proposed standards for intern training programs. The speaker will cover two types of internships, namely, the one year full-time training program in the hospital pharmacy and the two year program in which time is divided between graduate study leading to a Master of Science degree and practical training in the hospital pharmacy.

1:30 to 2:00 P. M.**Should the Central Sterilizing Department be under the Supervision of the Pharmacist?**

W. Arthur Purdum

The speaker will cite the advantages of coordinating the work of the pharmacy and "central supply" departments.

2:00 to 2:45 P. M.**Sterilization Processes and Pyrogens**

Walter F. Hitzelberger

A discussion of our present day knowledge of sterilization procedures. The lecturer will also discuss the causes of pyrogens, steps to be taken to prevent their formation, and procedures for their removal from solutions.

3:00 to 3:45 P. M.**The Manufacture and Packaging of Large Volume Parenteral Solutions**

Walter F. Hitzelberger

A discussion of the preparation of intravenous solutions. Economic aspects will be given consideration. Slides or actual equipment will be shown and formulas distributed.

4:00 to 4:45 P. M.**The Manufacture and Packaging of Small Volume Parenteral Solutions**

Eric Owyang

A discussion of the preparation of ampuls and multiple dose vials. Slides will depict equipment employed. Formulas with directions will be distributed.

7:00 to 9:00 P. M.**Group Discussion:****Parenteral Solutions and Pharmaceutical Manufacturing**

Chairman: Don E. Francke

Don E. Francke  
Stephen J. Dean, Jr.  
Walter F. Hitzelberger  
Dwight L. Oliver  
Eric Owyang

Elmer M. Plein  
W. Arthur Purdum  
Francis R. Spinelli  
Ralph E. Wieland  
Jerome M. Yalon

\* \* \*

FRIDAY, JULY 1

Chairman: Francis R. Spinelli

8:30 to 9:15 A. M.**The Manufacture of Allergenic Extracts**

Don E. Francke

This lecture will include a demonstration showing the principal steps in the manufacture of these preparations.

9:30 to 10:15 A. M.**Group Discussion****Pharmacy Service in Government Hospitals**

George Archambault  
W. Paul Briggs  
E. Burns Geiger  
Othmar Goriup

Alternates: James H. Morris  
Boyd Stephenson  
Charles G. Towne  
Ullmer Wilson

10:30 to 11:15 A. M.**Radioactive Isotopes in Diagnosis and Therapy**

Bertram V. A. Low-Beer, M. D.,  
Associate Professor of Radiology, University of California

**Institute Luncheon and Award of Certificates**



# Organization News

## SOUTHERN CALIFORNIA CHAPTER

The March meeting of the SOUTHERN CALIFORNIA CHAPTER OF THE AMERICAN SOCIETY OF HOSPITAL PHARMACISTS was held at the Methodist Hospital in Los Angeles. Announcement was made in regard to the forthcoming meeting of the Western Hospital Association and Mr. Charles Hagan was appointed to represent the chapter at the convention.

On discussing the program for forthcoming meetings, Mr. Taylor McCain explained a plan called the "workshop program" in which four chairmen discuss with their committee members the various aspects of the subject assigned and summarize their findings at the meeting. The following aspects of sterilization will be presented at the April meeting.

1. Theoretical Aspect - (U.S.P., N.F., etc.)
2. Planning and Equipping a sterilizing room.
3. Manufacturing of large volume sterile solutions.
4. Manufacturing of small volume sterile solutions (ampuls, vials).

Chairmen appointed to lead the four groups are Richard Slanker, Louis Gottesman, Charles Towne, and John Gooch.

## ILLINOIS CHAPTER

"Colds -- Therapy of the Common Cold" was the subject presented by Dr. Noah O. Fabricant, Assistant Professor of Otolaryngology at the University of Illinois, at the March meeting of the ILLINOIS CHAPTER OF THE A.S.H.P.

## OHIO SOCIETY

Holding its ninth annual meeting, THE OHIO SOCIETY OF HOSPITAL PHARMACISTS met in Columbus on March 25 and 26. Speakers on the program included: George J. Gray, Narcotic Agent in Columbus, who spoke on "Narcotic Control in the Hospital"; Hugh C. Muldoon, Dean of Duquesne University School of Pharmacy who spoke on "Trends in Pharmaceutical Education" and Paul Wilcox, Director of Pharmaceutical Research at

Sharp and Dohme, Inc. who discussed "Pharmaceutical Research." Included also on the program was a round table discussion on the Pharmaceutical Survey.

During the business session the group heard reports of the officers and various committee chairmen. Mr. Thomas E. Sisk, chief pharmacist at St. Joseph's Hospital in Lorain, Ohio was installed as president for the coming year.

## GREATER ST. LOUIS CHAPTER

Twenty-five members and eight associate members were present at the February meeting of the GREATER ST. LOUIS CHAPTER OF THE AMERICAN SOCIETY OF HOSPITAL PHARMACISTS, held at the Chase Hotel. Following a dinner sponsored by the Hoffman-La Roche Company, a business session was held during which time the proposed minimum standards were discussed. Members were asked to send their comments to the president for transmittal to the chairman of the A.S.H.P.'s Committee on Minimum Standards.

A talk on "Vitamins in the Food Industry" was given by Mr. Robert Keppler, district manager of Hoffman-La Roche, followed by a movie on nicotinic acid.

## NORTHERN CALIFORNIA CHAPTER

The March meeting of the NORTHERN CALIFORNIA CHAPTER OF THE AMERICAN SOCIETY OF HOSPITAL PHARMACISTS was held at the Southern Pacific Hospital in San Francisco with thirty-seven members present. Mr. J. M. Yalon presented a lecture on "Self Sterilizing Ophthalmic Solutions," followed by a discussion.

Included in the business session was a discussion of the forthcoming Institute on Hospital Pharmacy, announcement that the society would assist in obtaining positions in hospital pharmacy and providing hospitals with pharmacists, introduction of new members, and plans for the proposed Bulletin to be published by the Northern California Chapter were outlined. Mr. J. M. Yalon was appointed delegate to the A.S.H.P. House of Delegates meeting at the annual convention in Jacksonville. Mr. Claude Busick was appointed alternate.

Review of the proposed minimum standards took place at the February meeting of the NORTHERN CALIFORNIA CHAPTER OF THE AMERICAN SOCIETY OF HOSPITAL PHARMACISTS. Suggested changes were voted upon and the results forwarded to the chairman of the minimum standards committee.

#### GREATER NEW YORK CHAPTER

THE GREATER NEW YORK CHAPTER OF THE AMERICAN SOCIETY OF HOSPITAL PHARMACISTS held its January meeting at St. Mary's Hospital in Hoboken, N. J. Those present reviewed the proposed minimum standards for hospital pharmacies and the secretary was instructed to forward a report of their findings to Mrs. Evelyn Scott, chairman of the committee on minimum standards.

#### NEW JERSEY SOCIETY

THE NEW JERSEY SOCIETY OF HOSPITAL PHARMACISTS attended a panel discussion on the proposed six-year pharmacy program at the Rutgers College of Pharmacy on February 24. Following the panel discussion, the hospital pharmacists discussed the clinical uses of Dihydrostreptomycin. Copies of "Pharmacolograph," a condensed review of new drugs compiled by society members, were distributed.

#### AKRON AREA SOCIETY

At the February meeting of the AKRON AREA SOCIETY OF HOSPITAL PHARMACISTS, the proposed minimum standards for pharmacies and for internships in hospital pharmacy were reviewed. Comments and suggestions were forwarded to the chairman of the A.S.H.P. committee on minimum standards.

Plans have been made for the April meeting at which time the Cleveland Hospital Pharmacists will join the Akron society.

#### WISCONSIN HOSPITAL PHARMACISTS

Meeting at the Sacred Heart Sanitarium on March 18, THE WISCONSIN SOCIETY OF HOSPITAL PHARMACISTS heard Dr. John S. Hirschboeck, Dean of Marquette University Medical

School, who discussed "New Drugs in the Treatment of Blood Diseases." Among the new preparations being used experimentally, Dr. Hirschboeck mentioned the experimental work which is being carried out using vitamin B<sub>12</sub>, aminopterin and the nitrogen mustards.

Plans are being made to hold the April meeting in Madison with the program in charge of Dr. Uhl, Dean of the University of Wisconsin School of Pharmacy.

#### CLEVELAND SOCIETY

Twenty-eight members and guests were present at the January meeting of the CLEVELAND SOCIETY OF HOSPITAL PHARMACISTS which met at St. Vincent Charity Hospital. Ten members were proposed for active membership in the society.

Mr. Herbert Decker, chief pharmacist at Cleveland Clinic was the speaker. His discussion was based on the article entitled "Detail Man - Hospital Pharmacists' Friend" which appeared in the November-December (1948) issue of THE BULLETIN. During the discussion it was suggested that hospital pharmacists in Cleveland arrange a schedule with the detail men. Included also on the program was Mr. Frank Hayba of the Cleveland Hospital Council who discussed the Hospital Council and the Drug Formulary recently published.

As chairman of the committee on minimum standards, Mr. Roger Marquand led the discussion of the proposed standards.

#### PHILADELPHIA HOSPITAL PHARMACISTS

Four ten-minute movies of interest to hospital pharmacists were included on the program for the February meeting of the PHILADELPHIA HOSPITAL PHARMACISTS ASSOCIATION. The titles of these movies are "The Story of Human Energy"; "Water, Water, Everywhere"; "Diagnosis Danger," which shows safety precautions in the pharmacy; and "1000 cc. Dextrose 5 percent in saline," which shows the preparation of intravenous solutions at Cutter Laboratories.

#### CINCINNATI SOCIETY

THE SOCIETY OF HOSPITAL PHARMACISTS OF GREATER CINCINNATI in cooperation with the Cincinnati College of Pharmacy, is sponsoring a series of six lectures designed to provide perti-

ment information on the newer pharmaceuticals and other subjects of interest to pharmacists. All pharmacists are eligible and a certificate will be awarded to persons attending the complete series of lectures. Mimeographed outlines of the subject matter is distributed at each lecture. The following lectures are being presented:

Tuesday, February 22, 1949 - "The Therapeutics of Antihistamine Drugs" by Dr. L. Fox, Cincinnati College of Pharmacy.

Tuesday, March 1, 1949 - "Collyria - Isotonicity and pH" by F. J. Blandelin, Technical Director, Flint Eaton & Co.

Tuesday, March 8, 1949 - "The Trial" - A mock trial pertaining to mislabeling drugs and manufactured products. Participants include: Ed Becker, Defendant; Herman Humphries, Attorney for the Defense; Dr. L. J. Klotz, Prosecuting Attorney; and Judge J. McCarthy, Presiding Judge.

Tuesday, March 15, 1949 - "A Review of Some of the Newer Developments in Medications." Participants include Eugene Trainer, Cincinnati General Hospital, who will discuss Rutin; J. H. Voige, Veterans Hospital, who will discuss Sulfonamides; A. J. Davis, Veterans Hospital, who will discuss muscle relaxants; and Miss Mary Beatty, Christ Hospital, will review vitamin B12.

Tuesday, March 22, 1949 - "Compounding Preparations using the New Antibiotics" by Herman Humphries, St. Elizabeth Hospital.

Tuesday, March 29, 1949 - "A Study of Current Prescription Trends in Cincinnati" by Edward Plogman, Cincinnati College of Pharmacy.

#### SOUTHEASTERN HOSPITAL PHARMACISTS

After attending a two-day session at the convention of the American Pharmaceutical Association in Jacksonville on Monday and Tuesday, April 25 and 26, members of the SOUTHEASTERN HOSPITAL PHARMACISTS' ASSOCIATION will go to Biloxi, Mississippi to meet for their annual convention with the Southeastern Hospital Conference.

The Biloxi meetings will be held in the Garden Lounge of Hotel Biloxi on Thursday and Friday, April 28 and 29, beginning at 10 A.M. Thursday. Mrs. Joyce Gaines, President, has announced the following program:

"Moving A Hospital Pharmacy" - Miss Mary Wernersbach, Jackson Memorial Hospital, Miami, Florida.

"Medical Economics in Regard to the Use of Drugs" - Mr. Troy L. Carter, Veterans Hospital, New Orleans, Louisiana.

"The Importance of Pharmacology to the Hospital Pharmacists" - Mr. Gene Brown, Howard College, Birmingham, Alabama.

"Hospital and Retail Pharmacy Combined" - Mr. W. D. Upchurch, Methodist Hospital, Memphis, Tennessee.

"The Philosophy of the Hospital Pharmacist" - Mr. Hans S. Hansen, Administrator, Grant Hospital, Chicago.

"The Elliott Survey" - W. Paul Briggs, MSC., USN., Washington, D. C.

"Progress of VA Pharmacy" - Mr. C. S. Haupt, Chief of Pharmacy Division, Veterans Administration, Atlanta, Georgia.

"The Role of Pharmacy in the Outpatient Department" - Miss Frances Pizzolato, Touro Infirmary, New Orleans, Louisiana.

A round table discussion will be conducted after each of the three sessions with all attending pharmacists participating. The meetings will conclude with the appointment of committee chairmen and the installation of new officers for the ensuing year. Mr. Albert P. Lauve, chief pharmacist at Mercy Hospital in New Orleans, will be installed as president.

\*\*\*\*\*

#### POSITIONS IN HOSPITAL PHARMACY

##### POSITIONS IN HOSPITAL PHARMACY

WISCONSIN...Position for woman as assistant pharmacist open at Milwaukee Hospital. Salary open, two weeks vacation, one week sick leave, 44 hour week. Hospital experience desirable. Must be able to be registered in Wisconsin. For further information write to Sister Gladys Robinson, Chief Pharmacist.

OHIO...Position open at St. Elizabeth Hospital in Youngstown, Ohio for an assistant pharmacist. This is a 300-bed hospital, work hours are from 8:30 to 5:00 with a 44 hour week. Write to Sister Jeanne Marie, Chief Pharmacist.

KANSAS...Position as an assistant pharmacist open in a 500-bed general hospital. Work consists of filling routine supplies, prescriptions and manufacturing. Salary open for discussion. Woman pharmacist preferred. Write to Sister Superior, St. Francis Hospital, Wichita, Kansas.





## new members

### ARIZONA

Freese, (Mrs.) Violet Names, 634 N. 6th Ave., Phoenix,  
McLymont, James Vance, 1404 B Avenue, Douglas,

### CALIFORNIA

Alekna, Emily A., 648 Westminster Dr., Pasadena,  
Buckmaster, Marion A., 984 W. Arrow, Fontana,  
Dolcini, Mabel Beatrice, 3440 - 25th Street, San Francisco,  
Garcia, Virginia B., 401 Parnassus Ave., San Francisco,  
Heard, Jack Stuart, 3121 Santiago, San Francisco 16,  
Herbelin, Francis J., 914 Volante Dr., Arcadia,  
Kuck, Marie Bukovsky, 11727 Satcor St., No. Hollywood,  
Kurihara, Kenichi, 544 Riverdale, Glendale,  
LaShier, Bion Edwin, 1110 N. Kenmore, Los Angeles,  
Nichols, Lucy, 3234 Ellington Dr. Hollywood,  
Oliver, Dwight Llewellyn, 2651 Las Aromas, Oakland 11,  
Phillips, Norma Wingood, 5990 Lindenhurst, Los Angeles,  
Sister M. Aquina Speer, 601 E. Micheltoreno, Santa Barbara,  
Sprinkle, Mildred, 5266 Raber Street, Los Angeles 42,  
Stauffer, Edward E., 1013 So. 5th St., Alhambra,  
Wackerman, Frank Joseph, 517 Lemon Ave., Arcadia,  
Weiss, Julian Allan, 1651 - 35th Ave., San Francisco 22,

### CONNECTICUT

Sister Constance M. Tracy, St. Joseph's Hospital, Stamford,

### FLORIDA

McCullough, Max H., 2400 S. W. 16th St., Miami 33,

### ILLINOIS

Irwin, Mildred E., 1535 E. 60th Street, Chicago 37,  
Ronnio, William H., 6102 N. Hamilton, Chicago 45,  
Shlifer, Mrs. B., 5306 University, Chicago,  
Sister M. Gerald, 4950 W. Thomas St., Chicago 51,

### INDIANA

Smith, Mae Ola, 2353 N. Adams St., Indianapolis 18,  
Wesler, Marion Allen, 505 South Street, Batesville,

### IOWA

Patrick, Maxwell C., 2601 - 34th St., Des Moines,

### LOUISIANA

Ferring, Lawrence Francis, 4210 St. Peter, New Orleans,  
Nugent, Elsie (Mrs.), 1024, Mandeville, New Orleans,  
O'Brien, William Patrick III, 529 Jefferson, New Orleans,

### MAINE

Wentworth, Elbert Wesley, Thorne Avenue, Lewiston,

### MARYLAND

Brown, Carl H., 537 N. Wolfe St, Baltimore 5,  
Coleman, Mary Ann, 804 St. Paul, Baltimore,  
Friedman, Charles S., 2513 Liberty Hgt, Ave., Baltimore

### MICHIGAN

Benton, William Henry, 513 E. Pasadena, Flint,  
Sroka, Amelia Elsie, 18663 Syracuse, Detroit 34,

### MINNESOTA

Sherk, Waldemar, 4348 Oakland, Minneapolis,

### MONTANA

Halcomb, Winston Lee, Pharmacy V.A. Hospital, Ft. Harrison,

### NEBRASKA

Sister M. Jane Frances Weiss, 1145 South, Lincoln,

### NEW JERSEY

Hawthorne, Kenneth C., 59 Hopper Ave., Pompton Plains,  
Lach, Bruce F., 169 Third Street, Elizabeth,

### NEW YORK

Fatica, Mario M., 520 Wales Ave., Bronx,  
Frischia, Theresa R., 3327 Bainbridge Ave., New York 67,  
Glantz, Milton, 48-36 - 44th Street, Woodside, L. I.

### OREGON

Corbin, Patricia Ann, 3010 N. Ainsworth, Portland 11,  
Hart, R. Franklin, 4435 NE - 35th Ave., Portland,

### OHIO

Escavage, Freda, 3820 East k 149th St., Cleveland 20,  
Schneider, Howard Edwin, 356 Frebis Avenue, Columbus,  
Smith, Ione Card, 1739 - 14th St., S. E., Massillon,

### PENNSYLVANIA

Kavanagh, Marie E., 5516 Cedar Ave., Philadelphia 43,  
Liner, Milton H., 1417 Market, Pottsville, Pa.  
Taliaferro, Lawrence R., 638 Coates St., Coatesville,

### TEXAS

Wolfthal, Abraham, 2325 West Magnolia, Fort Worth,

### VIRGINIA

Anderson, Robert D., 614 N. Columbus, Alexandria,  
Branson, Joanne B., 1200 E. Marshall, Richmond 19,  
Rice, David L., 4202 N. Henderson Rd., Arlington,  
Snow, Carmel Miriam, 3828 Florence Drive, Arlington,

### WISCONSIN

Benka, William B., 6133 W. Washington Blvd., Milwaukee 13,  
Sister M. Beatrice DeJarnette, OSF, 1526 Grand Ave., Racine,  
Sister M. Medicia Bride, OSF, 1545 S. Layton, Milwaukee,  
Townsend, Everett A., 2142 N. Palmer, Milwaukee,

### CUBA

Tamargo-Sanchez, Margarita, 10 St., #456, Vado, Havana,